

NOTICE

All drawings located at the end of the document.

SITE-SPECIFIC HEALTH AND SAFETY PLAN
IMPLEMENTATION OF PHASE I RFI/RI
WORK PLAN, WOMAN CREEK PRIORITY DRAINAGE,
OPERABLE UNIT NO. 5

Prepared For:

EG&G ROCKY FLATS, INC.
Environmental Management Department
Remedial Action Programs Division
Building 80
P.O. Box 464
Golden, CO 80402-0464

Prepared By:

ADVANCED SCIENCES, INCORPORATED
405 Urban Street, Suite 401
Lakewood, CO 80228

August, 1994

RFI/RI WORK PLAN HEALTH AND SAFETY PLAN
APPROVAL SHEET

EG&G ROCKY FLATS PLANT

Document Number:

RF/ER-94-00045

Section: (Sect. #) (Rev. #)

Approval Sheet

Page:

1 of 1

Effective Date:

09/27/94 *line*

Organization:

ER OU 5,6 & 7 Closures

TITLE:

Site Specific Health and Safety Plan,
Implementation of Phase I RFI/RI Work Plan
Woman Creek Priority Drainage,
Operable Unit No. 5

Approved By:

E. G. Nash
OU5, 6&7 Closures Program Manager

8 / 31 / 94
Date

C. A. B. L.
OU5 Project Manager

8 / 31 / 94
Date

Kenn D. C.
ERPD Health and Safety Officer

9 / 7 / 94
Date

ROCKY FLATS ENVIRONMENTAL	Manual No.:	RF/ER-94-00045
TECHNOLOGY SITE	Section No.	Table of Contents, R1
SITE-SPECIFIC HEALTH & SAFETY	Page:	1 of 2
PLAN, IMPLEMENTATION OF PHASE I	Effective Date:	11/09/94
RFI/RI WORK PLAN, WOMAN CREEK	Organization:	Environmental Restoration Mgmt
PRIORITY DRAINAGE, OU5		

TABLE OF CONTENTS
SITE SPECIFIC HEALTH AND SAFETY PLAN
IMPLEMENTATION OF PHASE I RFI/RI WORK PLAN
WOMAN CREEK PRIORITY DRAINAGE, OPERABLE UNIT 5

<u>Section No.</u>	<u>Title</u>	<u>Rev. No.</u>	<u>Effective Date</u>
	Detailed Table of Contents	0	09/27/94
1.0	Introduction	0	09/27/94
2.0	Health & Safety Responsibilities	0	09/27/94
3.0	Hazard Assessment	0	09/27/94
4.0	Hazard Communication	0	09/27/94
5.0	Site Control	0	09/27/94
6.0	Personal Protective Equipment	0	09/27/94
7.0	Decontamination	0	09/27/94
8.0	Medical Surveillance	0	09/27/94
9.0	Monitoring	0	09/27/94
10.0	Training	0	09/27/94
11.0	Emergency Information	0	09/27/94
12.0	Material Handling	0	09/27/94
13.0	References	0	09/27/94
APPA	Appendix A: IHSS Location Maps from Operable Unit 5 Technical Memorandum No. 15	0	09/27/94
APPB	Appendix B: Heat Stress	0	09/27/94
APPC	Appendix C: Field Activities from Operable Unit 5 Phase I RFI/RI Work Plan and Technical Memorandum No. 15	0	09/27/94
•94-DMR-ERM-0136	Addition of Table C-1	0	11/09/94

DOCUMENT CONTROL OFFICE, MILWAUKEE
RER R.B. HOFFMAN, CLERK, DOCUMENT OFFICE
JUNE 11, 1994

ROCKY FLATS ENVIRONMENTAL	Manual No.:	RF/ER-94-00045
TECHNOLOGY SITE	Section No.	Table of Contents, R1
SITE-SPECIFIC HEALTH & SAFETY	Page:	2 of 2
PLAN, IMPLEMENTATION OF PHASE I	Effective Date:	11/09/94
RFI/RI WORK PLAN, WOMAN CREEK	Organization:	Environmental Restoration Mgmt
PRIORITY DRAINAGE, OU5		

<u>Section No.</u>	<u>Title</u>	<u>Rev. No.</u>	<u>Effective Date</u>
APPD	Appendix D: Respiratory Protection Program	0	09/27/94
APPE	Appendix E: Property Release Evaluation Forms for Equipment	0	09/27/94
APPF	Appendix F: Response to Comments on Draft Site-Specific Health & Safety Plan Dated July 24, 1992	0	09/27/94
APPG	Appendix G: Response to Comments on Draft Final Site-Specific Health & Safety Plan Dated August 24, 1992	0	09/27/94
APPH	Appendix H: Response to August 22, 1994 Comments on Site-Specific Health & Safety Plan in Preparation for Implementation of Technical Memorandum No. 15	0	09/27/94

1.0	INTRODUCTION	1-1
1.1	POLICY	1-1
1.2	REGULATIONS AND GUIDELINES	1-1
1.3	CONTENTS OF PLAN	1-2
1.4	BACKGROUND	1-3
1.5	LOCATIONS AND DESCRIPTIONS	1-3
1.5.1	Original Landfill (IHSS 115)	1-4
1.5.2	Ash Pits 1-4 (IHSSs 133.1, 133.2, 133.3, and 133.4); Incinerator (IHSS 133.5); and Concrete Wash Pad (IHSS 133.6)	1-6
1.5.3	Ponds C-1 and C-2 (IHSSs 142.10 and 142.11)	1-7
1.5.4	Surface Disturbance IHSS 209 and Other Surface Disturbances	1-8
2.0	HEALTH AND SAFETY RESPONSIBILITIES	2-1
2.1	INTRODUCTION	2-1
2.2	ASSIGNMENT OF RESPONSIBILITIES	2-1
2.2.1	ASI Site Safety Officer (SSO)	2-1
2.2.2	ASI Project Manager	2-2
2.2.3	ASI Field Operations Lead	2-3
2.2.4	ASI Health and Safety Specialist	2-3
2.2.5	Radiation Protection	2-4
2.2.6	Fire Protection Representative	2-4
2.3	ASI OU5 PERSONNEL	2-5
3.0	HAZARD ASSESSMENT	3-1
3.1	INTRODUCTION	3-1
3.2	POTENTIAL CHEMICAL AND RADIOLOGICAL HAZARDS	3-2
3.2.1	Pathways and Exposure Routes	3-2
3.2.2	Chemical Hazards	3-2
3.2.2.1	<u>Airborne Exposures to Volatile Organic Compounds</u>	3-2
3.2.2.2	<u>Skin Exposures to Volatile Organic Compounds</u>	3-3
3.2.2.3	<u>Inadvertent Ingestion of Contaminants</u>	3-3
3.2.3	Radiological Hazards	3-3
3.2.3.1	<u>Airborne Exposures to Radiological Hazards</u>	3-3
3.2.3.2	<u>Skin Exposures to Radiological Hazards</u>	3-4
3.2.3.3	<u>Inadvertent Ingestion of Radionuclides</u>	3-4
3.2.3.4	<u>Puncture Wounds</u>	3-4
3.2.4	Metals Contamination Hazards	3-5
3.2.4.1	<u>Pathways and Exposure Routes</u>	3-5
3.2.4.2	<u>Inhalation or Ingestion Exposure to Fugitive Dust Contaminated with Metals or Asbestos</u>	3-5

3.3	PHYSICAL HAZARDS	3-5
3.3.1	Cold Exposure	3-6
3.3.2	Heat Stress	3-6
3.3.3	Noise Exposure	3-7
3.3.4	Drill Rig Operations	3-7
3.4	BIOLOGICAL HAZARDS	3-15
3.5	MECHANICAL HAZARDS	3-16
3.6	POTENTIAL CHEMICAL OR RADIOLOGICAL HAZARDS AND CONTROL METHODS SUMMARY	3-16
3.6.1	Original Landfill (IHSS 115)	3-17
3.6.1.1	<u>Site Background Summary</u>	3-17
3.6.1.2	<u>Anticipated Work Activities</u>	3-17
3.6.1.3	<u>Potential Chemical or Radiological Hazards</u>	3-17
3.6.1.4	<u>Control Measures</u>	3-18
3.6.2	Ash Pits 1-4 (IHSSs 133.1, 133.2, 133.3, 133.4), Incinerator (IHSS 133.5) and Concrete Wash Pad (IHSS 133.6)	3-19
3.6.2.1	<u>Site Background Summary</u>	3-19
3.6.2.2	<u>Anticipated Work Activities</u>	3-20
3.6.2.3	<u>Potential Chemical or Radiological Hazards</u>	3-21
3.6.2.4	<u>Control Measures</u>	3-21
3.6.2.5	<u>Handling and Disposal of ACM Waste and Samples</u>	3-22
3.6.3	Ponds C-1 and C-2 (IHSSs 142.10 and 142.11)	3-22
3.6.3.1	<u>Site Background Summary</u>	3-22
3.6.3.2	<u>Anticipated Work Activities</u>	3-23
3.6.3.3	<u>Potential Chemical or Radiological Hazards</u>	3-24
3.6.3.4	<u>Control Measures</u>	3-24
3.6.4	Surface Disturbance (IHSS 209) and Other Surface Disturbances	3-24
3.6.4.1	<u>Site Background Summary</u>	3-24
3.6.4.2	<u>Anticipated Work Activities</u>	3-25
3.6.4.3	<u>Potential Chemical or Radiological Hazards</u>	3-25
3.6.4.4	<u>Control Measures</u>	3-25
3.6.5	Storm Sewer Video Camera Inspection	3-26
4.0	HAZARD COMMUNICATION	4-1
4.1	INTRODUCTION	4-1
4.2	HAZARDOUS MATERIALS INVENTORY	4-1
4.3	MATERIAL SAFETY DATA SHEETS	4-1
4.4	TRAINING	4-2
5.0	SITE CONTROL	5-1
5.1	OBJECTIVES	5-1

5.2	SITE CONTROL DESIGNATIONS	5-1
5.2.1	Exclusion Zone	5-2
5.2.2	Contaminant Reduction Zone	5-3
5.2.3	Support Zone	5-3
5.3	GENERAL OPERATING PROCEDURES	5-3
5.4	PLAN FOR PREVENTION OF CONTAMINANT DISPERSION	5-4
5.4.1	Objective	5-4
5.4.2	Scope	5-4
6.0	PERSONAL PROTECTIVE EQUIPMENT	6-1
6.1	INTRODUCTION	6-1
6.2	GENERAL APPLICATION OF PERSONAL PROTECTIVE EQUIPMENT	6-2
6.3	PERSONAL PROTECTIVE EQUIPMENT ISSUES APPLICABLE TO ALL SITE PERSONNEL	6-2
6.4	REUSE OF PPE	6-3
7.0	DECONTAMINATION	7-1
7.1	INTRODUCTION	7-1
7.2	DECONTAMINATION PROCEDURES	7-1
7.2.1	Personnel and Small Equipment Decontamination	7-1
7.2.2	Heavy Equipment Decontamination	7-2
8.0	MEDICAL SURVEILLANCE	8-1
8.1	MEDICAL MONITORING REQUIREMENTS	8-1
8.2	AVAILABILITY OF MEDICAL SERVICE	8-1
8.3	TRANSPORTATION FOR MEDICAL REASONS	8-1
8.4	MEDICAL RECORDS	8-2
8.4.1	Release of Medical Records and Medical Information	8-2
8.5	SUBCONTRACTOR MEDICAL SURVEILLANCE PROGRAM	8-3
9.0	MONITORING	9-1
9.1	INTRODUCTION	9-1
9.2	MONITORING INSTRUMENTS	9-1
9.3	CHEMICAL AND RADIOLOGICAL MONITORING	9-2
9.4	CHEMICAL-RELATED AIR MONITORING	9-2
9.4.1	Real-Time Monitoring	9-2
9.4.2	Personnel Monitoring	9-2
9.4.3	Sampling Procedures	9-3
9.5	RADIATION MONITORING	9-3
9.5.1	Personnel Monitoring	9-4
9.5.2	Surface Contamination Surveys	9-4
9.6	ACTION LEVELS	9-5

10.0	TRAINING	10-1
10.1	TRAINING REQUIREMENTS	10-1
10.1.1	Hazardous Waste Site Health and Safety	10-1
10.1.2	Radiation Worker Training	10-2
10.1.3	Site-Specific Briefing	10-2
10.1.4	Additional Training	10-2
10.1.5	Safety Meetings	10-2
10.1.6	Rehearsal of Emergency Response Plan	10-3
10.1.7	Visitors	10-3
10.2	IMPLEMENTATION OF TRAINING	10-4
10.3	PERFORMANCE EVALUATIONS	10-4
10.4	VERIFICATION OF TRAINING	10-4
11.0	EMERGENCY INFORMATION	11-1
11.1	NOTIFICATION	11-1
11.2	SPECIFIC SITE HAZARDS	11-3
11.3	FIRES AND EXPLOSIONS	11-3
11.4	SPILLS OF HAZARDOUS AND RADIOACTIVE MIXED WASTE AND HAZARDOUS MATERIAL	11-4
11.5	POST-EMERGENCY RESPONSE EQUIPMENT MAINTENANCE	11-4
11.6	EMERGENCY EQUIPMENT LOCATION	11-4
11.7	EVACUATION PLAN	11-5
11.8	COMMUNICATION	11-5
12.0	MATERIAL HANDLING	12-1
12.1	INTRODUCTION	12-1
12.2	MATERIALS HANDLING PROGRAM	12-1
13.0	REFERENCES	13-1

Site-Specific Health & Safety Plan
Operable Unit No. 5

Manual:
Section:
Page:
Organization:

RF/ER-94-00045
Table of Contents, Rev. 0
vi
ER OU 5, 6 & 7 Closures

LIST OF APPENDICES

- APPENDIX A - IHSS LOCATION MAPS FROM OPERABLE UNIT 5 TECHNICAL MEMORANDUM NO. 15
- APPENDIX B - HEAT STRESS
- APPENDIX C - FIELD ACTIVITIES FROM OPERABLE UNIT 5 PHASE I RFI/RI WORK PLAN AND TECHNICAL MEMORANDUM NO. 15
- APPENDIX D - RESPIRATORY PROTECTION PROGRAM
- APPENDIX E - PROPERTY RELEASE EVALUATION FORMS FOR EQUIPMENT
- APPENDIX F - RESPONSE TO COMMENTS ON DRAFT SITE-SPECIFIC HEALTH AND SAFETY PLAN DATED JULY 24, 1992
- APPENDIX G - RESPONSE TO COMMENTS ON DRAFT-FINAL SITE-SPECIFIC HEALTH AND SAFETY PLAN DATED AUGUST 24, 1992
- APPENDIX H - RESPONSE TO AUGUST 22, 1994 COMMENTS ON SITE-SPECIFIC HEALTH AND SAFETY PLAN IN PREPARATION FOR IMPLEMENTATION OF TECHNICAL MEMORANDUM NO. 15

Site-Specific Health & Safety Plan
Operable Unit No. 5

Manual:
Section:
Page:
Organization:

RF/ER-94-00045
Table of Contents, Rev. 0
vii
ER OU 5, 6 & 7 Closures

LIST OF TABLES

- 3-1 Operable Unit 5 Summary Table
- 3-2 Threshold Limit Values for Noise
- 3-3 Action Limits

- 6-1 Occupational Safety and Health Administration Standards
for Use of Personal Protective Equipment
- 6-2 General Personal Protective Equipment Inspection Checklists
- 6-3 Specific Requirements for Each Level of Protection

- 9-1 Local Air Monitoring Trigger Levels for Selected Radionuclides in Soils
- 9-2 Contamination Control Limits

LIST OF ACRONYMS AND ABBREVIATIONS

ALARA	As Low As Reasonably Achievable
ANSI	American National Standards Institute
CDH	Colorado Department of Health
CFR	Code of Federal Regulations
CLP	Contract Laboratory Program
cpm	counts per minute
CRQL	Contract Required Quantitation Limit
CRZ	Contaminant Reduction Zone
dBA	decibels
DOE	Department of Energy
dpm	disintegrations per minute
EC	Emergency Coordinator
EKG	Electrocardiogram
EMD	Environmental Management Department
EMRG	Environmental Management Radiological Guidelines
EMT	Emergency Medical Technician
EPA	Environmental Protection Agency
ER	Environmental Restoration
EZ	Exclusion Zone
FOL	Field Operations Lead
ft	feet
HSO	Health and Safety Officer
IAG	Interagency Agreement
IDLH	Immediately Dangerous to Life or Health
IHSS	Individual Hazardous Substance Site
IWCP	Integrated Work Control Package
kg	kilograms
LEL	Lower Explosive Limit
MSDS	Material Safety Data Sheet
NIOSH	National Institute for Occupational Safety and Health
NRC	Nuclear Regulatory Commission
OSA	Operational Safety Analysis
OSHA	Occupational Safety and Health Administration
OU5	Operable Unit 5
pCi/g	picocuries per gram

Site-Specific Health & Safety Plan
Operable Unit No. 5

Manual:
Section:
Page:
Organization:

RF/ER-94-00045
Table of Contents, Rev. 0
ix
ER OU 5, 6 & 7 Closures

LIST OF ACRONYMS AND ABBREVIATIONS

(Continued)

pCi/l	picocuries per liter
PEL	Permissible Exposure Limit
PM	Project Manager
ppb	parts per billion
PPCD	Plan for Prevention of Contaminant Dispersion
PPE	Personal Protective Equipment
ppm	parts per million
RCRA	Resource Conservation and Recovery Act
RFI/RI	RCRA Facility Investigation/Remedial Investigation
RFETS	Rocky Flats Environmental Technology Site
RPT	Radiological Protection Technician
SCBA	Self-contained Breathing Apparatus
SID	South Interceptor Ditch
SOP	Standard Operating Procedures
SSHSP	Site-Specific Health and Safety Plan
TLV	Threshold Limit Value
TSP	total suspended particulate
USCG	United States Coast Guard

Site-Specific Health & Safety Plan
Operable Unit No. 5

Manual:
Section:
Page:
Organization:

RF/ER-94-00045
1.0, Rev. 0
1-1
ER OU 5, 6 & 7 Closures

1.0 INTRODUCTION

1.1 POLICY

Advanced Sciences, Incorporated (ASI) has developed this safety plan in compliance with OSHA Hazardous Waste Operations and Emergency Response Regulations 29 CFR 1910.120 for hazardous waste site workers at the Rocky Flats Environmental Technology Site (RFETS). This plan is based on EG&G's Final Site-Specific Health and Safety Plan for OU5 (EG&G, 1992b) and incorporates those portions of EG&G's plan that are applicable to ASI. This site-specific Health and Safety Plan (SSHSP) addresses the requirements for ASI personnel managing, monitoring, and performing activities associated with the RCRA Facility Investigation/Remedial Investigation (RFI/RI) at Operable Unit 5 (OU5). The intent of the SSHSP is to define the hazards which may be present and the procedures which will be followed to protect ASI personnel.

ASI personnel will follow the SSHSP, and Rocky Flats procedures and policies identified herein when conducting work at OU5 sites. In addition, ASI-subcontractors are required to develop and implement their own SSHSP for their activities or their activities will be covered by this SSHSP. The ASI-subcontractor SSHSP will comply with procedures contained in this SSHSP. ASI-subcontractors will follow Rocky Flats Environmental Technology Site procedures and policies when applicable to site operations.

1.2 REGULATIONS AND GUIDELINES

Adherence to applicable federal, local, and national consensus organization health and safety standards, regulations, and guidance manuals is required during field activities at OU5. These include, but may not be limited to, the following:

- 29 CFR 1910, Occupational Safety and Health Standards, General Industry (latest edition);

Site-Specific Health & Safety Plan
Operable Unit No. 5

Manual:
Section:
Page:
Organization:

RF/ER-94-00045
1.0, Rev. 0
1-2
ER OU 5, 6 & 7 Closures

- 29 CFR 1926, Occupational Safety and Health Standards, Construction Industry (latest edition);
- Nuclear Regulatory Commission (NRC) 10 CFR 20 (latest edition);
- DOE Order 5480.11 (with revisions);
- Radiological Operating Instructions (ROI), EG&G Rocky Flats, Inc. (with revisions);
- Environmental Management Radiological Guidelines (EMRG) Manual, EG&G Rocky Flats, Inc. (with revisions);
- Health and Safety Practices Manual (HSPM), EG&G Rocky Flats, Inc. (with revisions);
- Threshold Limit Values (TLVs) for Chemical Substances and Physical Agents and Biological Exposure Indices, American Conference of Governmental Industrial Hygienists (ACGIH) (latest edition);
- Occupational Safety and Health Guidance for Hazardous Waste Site Activities, U.S. Department of Health and Human Services et al., October 1985; and
- ASI Corporate Health and Safety Policies and Procedures Manual (Currently under revision); January, 1992.

1.3 CONTENTS OF PLAN

This SSHSP describes known hazardous materials and work operations associated with the RFI/RI activities at OU5. The plan specifies responsibilities and authorities of ASI personnel involved in the supervision of activities at this site. This plan further describes the requirements for medical surveillance, personal protective equipment (PPE), hazard communication, training, monitoring, decontamination, site control, and emergency response procedures.

The potential hazards associated with Phase I RFI/RI activities at OU5 sites have been assessed by reviewing historical activities and previously performed studies at the Individual Hazardous Substance

Sites (IHSSs) within OU5. Based on the hazard assessment, plans for personal protective equipment, monitoring, decontamination, site control, and emergency response have been developed.

1.4 BACKGROUND

A comprehensive, phased program of site characterization, remedial investigations, feasibility studies, and remedial/corrective actions is in progress at RFETS. These investigations are being conducted pursuant to the 1986 Compliance Agreement between DOE, the U.S. Environmental Protection Agency (EPA), and the Colorado Department of Health (CDH), which addresses hazardous and radioactive mixed waste management at the plant. The Phase I RFI/RI at OU5 is part of the remedial investigation phase of this program.

A total of 10 IHSSs and two additional soil disturbance areas have been grouped into OU5. The following IHSSs are included in OU5:

- Original Landfill (IHSS 115);
- Ash Pits 1-4 (IHSSs 133.1,133.2,133.3,133.4), Incinerator (IHSS 133.5), and Concrete Wash Pad (IHSS 133.6);
- Ponds C-1 and C-2 (IHSSs 142.10 and 142.11); and
- Surface Disturbance (IHSS 209), the Surface Disturbance west of IHSS 209, and the Surface Disturbances south of the Ash Pit Area.

1.5 LOCATIONS AND DESCRIPTIONS

The ten IHSSs in OU5 are located along or within the drainage areas of an intermittent stream called Woman Creek. Appendix A contains location maps of OU5 and each IHSS from Technical Memorandum No. 15 (TM15) (EG&G, 1994). These IHSSs are identified in the Environmental Restoration Interagency Agreement (IAG), dated January 22, 1991, as the Original Landfill (IHSS 115), Ash Pits, Incinerator Area,

and Concrete Wash Pad (IHSSs 133.1 through 133.6), Detention Ponds C-1 and C-2 (IHSSs 142.10 and 142.11), and a Surface Disturbance (IHSS 209). Ponds C-1 and C-2 are the only IHSSs located on Woman Creek. The remaining eight IHSSs are located along the banks and/or upland areas that drain into Woman Creek or into the South Interceptor Ditch (SID). In addition to these ten IHSSs, a surface disturbance west of IHSS 209 and a surface disturbance south of the Ash Pits will also be investigated in the OU5 Phase I RFI/RI. IHSS 196, Filter Backwash Pond, was also added to the OU5 investigation and is included with IHSS 115 in the following discussions. The following IHSS descriptions are summarized from the Phase I RFI/RI Work Plan.

1.5.1 Original Landfill (IHSS 115)

The Original Landfill is located within the buffer zone just south of the RFETS security area and south of the west access road. It is located 250 feet (ft) north of Woman Creek on a moderately to steeply sloping south-facing hillside. The boundary of the landfill has been determined principally from historic aerial photographs and from the operational history of this unit. The landfill is approximately 240,000 square ft (5.5 acres). The southern boundary of the IHSS has been extended further south since it is now believed that wastes may be south of the SID. The Original Landfill was in operation from 1952 to 1968 and was used to dispose of general wastes generated at the RFETS. It is estimated that 2 million cubic ft of miscellaneous plant wastes are buried in the landfill, including such things as solvents, paints, paint thinners, oil, pesticides, and cleaners. The landfill also received beryllium and/or uranium wastes and may originally have been used as a graphite dump. It is reported that ash containing an estimated 20 kilograms (kg) of depleted uranium, produced when 60 kg of depleted uranium was inadvertently burned, was buried within the landfill. It is believed that small quantities of various other chemicals are also buried within the landfill. In a previous report, several sealed drums were reported to have been present on the north side of the landfill based on an interpretation of a 1969 aerial photograph.

The landfill was closed with a soil cover, but erosion and sloughing have resulted in an irregular ground surface, and the quality and integrity of the cover is questionable. As there is a cover over the facility,

Site-Specific Health & Safety Plan
Operable Unit No. 5

Manual:
Section:
Page:
Organization:

RF/ER-94-00045
1.0, Rev. 0
1-5
ER OU 5, 6 & 7 Closures

surface water runoff from the landfill should not come in contact with the waste in the IHSS. However, because of the potentially unstable nature of this cover, the surface water may be contaminated.

A gamma survey of surficial soil using a germanium detector was performed in 1990. The highest concentration of U-238 detected was 19 pCi U-238/gram of soil. The levels of the other radionuclides detected by this survey were consistent with background concentrations.

Two 3-ft-diameter corrugated metal pipes, one to the west and one to the east, protrude from the landfill. No flow was observed from these pipes during several site visits in 1990. The west pipe appears to be connected to an abandoned storm drain constructed with 15-inch vitrified clay pipe. The east pipe is reported to be connected to a 36-inch reinforced concrete pipe, which is connected to the footing drains of Building 460 and possibly several drainage pipes on the plant site. Currently, the surface outfall of this pipe does not appear to be connected to a drainage pipe. In July 1986, after a major rainstorm, seepage began emerging from the Original Landfill. This seepage was subsequently traced to the east pipe. The SID was enlarged shortly after the seepage was recognized. During a site visit in February 1988, water was heard flowing within this eastern pipe. In addition, a berm structure was constructed south of the SID to prevent surface runoff from crossing the SID during a major storm event. A containment embankment was constructed near the east pipe to stabilize the irregular and hummocky surface that existed at the landfill.

Since the site was capped and gamma surveys indicate very low concentrations of radionuclide contamination, it can be inferred that other contaminants such as beryllium are also unexposed. Non-disturbing activities on the surface may therefore be performed without respiratory protection as long as the total suspended particulates (TSP) concentration remains below five (5) milligrams per cubic meter (mg/m^3).

Soil disturbing activities have the potential to resuspend contaminated particulates in the breathing zone of workers.

1.5.2 Ash Pits 1-4 (IHSSs 133.1, 133.2, 133.3, and 133.4); Incinerator (IHSS 133.5); and Concrete Wash Pad (IHSS 133.6)

There are six IHSSs discussed together in the following subsection (four Ash Pits, the Incinerator and the Concrete Wash Pad). These six IHSSs have been grouped together because of their proximity to each other and interrelated histories.

The Incinerator, Ash Pits, and Concrete Wash Pad are located south-southwest of the main security area of the RFETS, south of the west access road, and north of Woman Creek. The locations of these IHSSs are defined from historic aerial photographs. The incinerator, which had a 10 to 20 foot stack, was located along the plant's original west boundary, off the west access road. The Ash Pits are located to the east and the Concrete Wash Pad to the southwest of the Incinerator. Ash Pits 1, 2, 3, and 4 (IHSSs 133.1, 133.2, 133.3, and 133.4) are approximately 8 ft wide by 150 ft long and 3 ft deep. However, these Ash Pits may be larger as the exact boundaries and dimensions of each unit are somewhat undefined. The four Ash Pits are located on a relatively flat surface and are currently covered by tall grasses.

The Incinerator area (IHSS 133.5) occupies approximately 4,000 square ft and the Concrete Wash Pad (IHSS 133.6) covers an area of about 33,000 square ft. These two IHSSs are located west of the four Ash Pits. The Concrete Wash Pad has an extremely irregular hummocky surface that slopes gently to the south toward Woman Creek. The distance from these IHSSs to Woman Creek varies from about 25 ft to 630 ft with the Concrete Wash Pad being the closest to Woman Creek. A steep slope is present just north of the Ash Pits and the incinerator area. A dirt road crosses Ash Pit 3 (IHSS 133.3).

The Incinerator (IHSS 133.5) was used to burn general plant wastes between the 1950s and 1968. Depleted uranium is also believed to have been burned in the incinerator. A review of aerial photographs revealed that the Incinerator was removed by 1971 and the entire area was beginning to revegetate. Ashes from the Incinerator in addition to asbestos containing materials were placed into the Ash Pits (IHSS 133.1 through 133.4) or were pushed over the side of the hill into the Woman Creek drainage and/or onto the

Concrete Wash Pad (IHSS 133.6). Following the shutdown of the incinerator after 1968, the Ash Pits were covered with fill; however, information about the material used in the construction of the cover is unavailable.

The history of the Concrete Wash Pad has not been as well documented as the Ash Pits or Incinerator area. It appears that this area was used to dispose of waste concrete from the concrete trucks involved in the construction activities of the plant facility. It is also likely that the concrete trucks were washed down in this area after delivering concrete. A steep slope is present north of these six IHSSs and surface runoff from these units is toward the south. The upslope area that contributes runoff to these IHSSs is not very large since drainage north of the access road is intercepted by a ditch along the road. Consequently, only a small amount of runoff crosses these units. The soils which cover these IHSSs probably limit contact of surface water with the materials that may be present.

1.5.3 Ponds C-1 and C-2 (IHSSs 142.10 and 142.11)

Ponds C-1 (IHSS 142.10) and C-2 (IHSS 142.11) are located along Woman Creek, southeast of the main security area of the RFETS and within the Buffer Zone. These ponds are approximately 2,000 ft apart, with Pond C-1 to the west of Pond C-2. The estimated capacities for Ponds C-1 and C-2 are approximately 750,000 gallons and 22,480,000 gallons, respectively.

The C-series Detention Ponds are used primarily to capture and control surface water runoff from the plant's facilities and from Woman Creek. Filter backwash water from the water treatment facility was discharged to Pond C-1 (IHSS 142.10) between plant start-up in 1952 and December 21, 1973. In addition, cooling tower blowdown water was discharged to Pond C-1 until the latter part of 1974.

In the early 1970s, plant operations were changed and Pond C-1 was used principally to manage surface water runoff in the Woman Creek drainage.

Pond C-2 (IHSS 142.11) was constructed in 1980 to detain runoff water from the SID. The water in Pond C-2 is monitored monthly and discharged periodically. The discharged water is treated by an activated carbon treatment facility and pumped via pipeline toward Great Western Reservoir, where the water is diverted around this Reservoir by the Broomfield Diversion Ditch. The Broomfield Diversion Ditch discharges into Big Dry Creek. The last time Pond C-2 was discharged was in June 1990. Currently, the pond (as of January 1, 1991) is about 25 percent full, containing approximately 5.7 million gallons.

1.5.4 Surface Disturbance IHSS 209 and Other Surface Disturbances

Three separate surface disturbances are described in this section: IHSS 209, the surface disturbance west of IHSS 209, and the surface disturbance south of the Ash Pits. IHSS 209 is located to the southeast of the Rocky Flats Environmental Technology Site security area, south of Woman Creek and approximately 1,000 ft southeast of Pond C-1 (IHSS 142.10). This area was included as an IHSS because unknown activities took place in this area of shallow excavations and surface disturbances. This IHSS covers approximately 225,000 square ft (5.2 acres) and is located on a long narrow plateau bounded to the north, east and south by a uniform slope leading into the Woman Creek drainage. A dirt road transects this IHSS and loops near the eastern boundary. Three excavations are located within the boundary of this IHSS. Two depressions which periodically retain water are present near the northern and southwestern boundary of this unit.

A second surface disturbance is located approximately 1,500 ft west of IHSS 209. The area consists of four small disturbed areas symmetrically placed around a fifth disturbed area. This disturbance covers an area of approximately 62,500 square ft.

A third surface disturbance area has been added to the OU5 investigation. This area is located 1,200 ft south of IHSS 133.1 through 133.4 and south of Woman Creek. This area consists of five former excavation areas. These surface disturbances were identified in aerial photographs taken between 1955 and 1988. There is still surface evidence of some of these disturbances. Two former excavations trend

along the northeast-southwest axis. Each excavation is approximately 30 ft wide by 400 ft long. A horseshoe-shaped area, or the east area, is located northeast of the parallel excavations, and a third excavation (3 ft wide by approximately 2 ft deep) is located to the southwest. This excavation trends in a north-south direction across the plateau. A west area is approximately 600 ft by 150 ft and is located upslope (southwest) from the other disturbances.

It is not known what activities have taken place at IHSS 209, the surface disturbance west of IHSS 209, or at the surface disturbance south of the Ash Pits. However, the time period in which these areas were disturbed can be estimated from aerial photographs.

IHSS 209 first appears as a disturbed area in a 1955 aerial photograph. The ground was disturbed both west and east of the dirt road; however, no obvious features or equipment can be seen in the photo. By 1961, three excavations existed within this IHSS. The depression located near the southwestern boundary of this IHSS appears as a pond in the 1980, 1983, and 1988 aerial photographs. The 1980 aerial photographs also reveal that the western half of the IHSS was beginning to revegetate. By 1988, the only recognizable features on or near this surface disturbance was the presence of the easternmost excavation and the pond located near the northern boundary of this IHSS.

The east excavation area was the first area to be noted as active in the surface disturbances south of the Ash pits. This was observed in a 1955 aerial photograph. The two parallel excavations became active prior to 1978, as they are visible in the 1978 photo. After 1983, the excavation areas started to revegetate. The west area, located approximately 400 ft southwest of the parallel excavations became active prior to 1969. This area is now backfilled with large rocks.

2.0 HEALTH AND SAFETY RESPONSIBILITIES

2.1 INTRODUCTION

ASI is responsible for the health and safety of its employees. However, EG&G and ASI share many of the health and safety functions associated with OU5. EG&G provides services which are common to its own needs and those of its subcontractors. Examples of EG&G services used by contractors are the Thermoluminescent Dosimetry (TLD) program and internal dosimetry programs.

2.2 ASSIGNMENT OF RESPONSIBILITIES

The assignment of responsibilities for health and safety parallels that outlined in Environmental Management Radiological Guidelines (EMRG).

2.2.1 ASI Site Safety Officer (SSO)

The SSO is responsible for administration of the ASI Occupational Health Program. These responsibilities include the following:

- Implementing the applicable SSHSP and verifying compliance with all applicable health and safety requirements;
- Ensuring that updated copies of the Health and Safety Plan (HSP), applicable SSHSP, EMRGs, and all documents referenced by the EMRGs, are available to subcontractor employees;
- Supervising HSSs in the performance of their responsibilities;
- Ensuring HSSs and subcontractor employees are advised of the radiological hazards, both expected and suspected, by posting and controlling radiological areas according to EMRG instructions;

- Ensuring that HSP 18.19, "Criteria and Actions for Potential Intakes," is adhered to for the duration of the project;
- Verifying that performance testing of EG&G and subcontractor-owned instruments has been conducted in accordance with the manufacturer's recommendations. The SSO will also ensure that the test results are recorded daily in a calibration log specific to each instrument;
- Reviewing and approving completed survey reports/forms. If an unsatisfactory report/form is received, it will be returned to the appropriate individual(s) for correction. When conducting this review, the SSO will ensure that:
 - the correct report/form is complete
 - the entries are reasonable
 - the required signatures are affixed to the report;
- Forwarding approved survey reports/forms to the EMRE and maintain a file of all completed Radiological Survey Forms. This file will be organized by survey areas, with an index placed in the front of the file;
- Immediately contacting the EMRE by phone when survey results indicate radiation levels exceed 5 millirems/hour. For contaminant radiation levels requiring access controls not already established, or levels exceeding an established action level, the EMRE will also be notified; and
- Maintaining an instrumentation Field Log Book which documents the specific equipment used at the work site.

2.2.2 ASI Project Manager

The ASI Project Manager (ASI-PM) for OU5 has overall responsibility for work performed by ASI and ASI-subcontractors at the site. The ASI-PM, through line management and supervisors, has responsibility for implementing and enforcing the SSHSP. The ASI-PM has the responsibility for appointing a SSO and an alternate. ASI-subcontractors will submit a site-specific SSHSP to ASI for review and approval prior to initiating work at the site.

2.2.3 ASI Field Operations Lead

The ASI Field Operations Lead (FOL) for OU5 has responsibility for day-to-day management of field work performed by ASI and ASI-subcontractors. The FOL, in coordination with line management, has responsibility for assigning qualified personnel to perform field activities. The HSS, with support from the health and safety-related disciplines, will assist the ASI Field Operations Lead (FOL) in coordinating the implementation of the SSHSP.

2.2.4 ASI Health and Safety Specialist

Duties of the subcontractor HSS include the following:

- Ensuring that ASI personnel are adequately trained so that they can safely perform their assigned tasks;
- Ensuring that ASI personnel are aware of potential site hazards, and that they know the necessary controls to prevent overexposure or injury by conducting site-specific briefings;
- Ensuring that the SSHSP and the required training and medical records for ASI site personnel are current and are maintained on site;
- Ensuring that all ASI personnel have read and signed the SSHSP. A copy of the signed SSHSP must be kept in the ASI work trailer;
- Conducting the required monitoring or assuring that monitoring is conducted by the assigned personnel and document the results, as required by the EMRGs, the applicable SSHSP, and the EG&G Rocky Flats Plant Site-Wide SOPS;
- Monitoring the project to ensure that the requirements of this SSHSP are implemented;
- Supervising Health and Safety Specialist in-training (HSST) during field activities;
- Countersigning all reports/forms completed by the HSST;
- Forwarding completed survey reports/forms to the SSO;

- Notifying the SSO of survey results that indicate radiation levels exceeding 5 mrem/h, levels requiring access controls not already established, or levels exceeding an established action level;
- Controlling access and advising all personnel when radiological precautions are required; and
- Completing performance and operational checks required for radiation instruments and making entries in the Instrumentation Field Log Book.

2.2.5 Radiation Protection

ASI health and safety specialists (HSSs) will perform tests according to SOP FO.6 to minimize the potential for exposure of field personnel and verify that equipment leaving the radiologically controlled areas or areas of suspected/potential soil contamination is in compliance with applicable regulations and standard operating procedures as identified in section 9.0. The HSSs will monitor soil surfaces and soil cuttings and will perform decontamination verification by frisking and smear testing. They will also ensure that field crews are in compliance with EG&G Radiation Work Permits. HSSs will be approved in writing by EG&G Radiological Engineering and will perform duties in accordance with the EG&G Environmental Management Radiological Guidelines (EMRGs).

2.2.6 Fire Protection Representative

The fire potential during environmental investigations does not justify the cost of providing an independent Fire Protection Representative. Fire emergencies will be handled by immediately notifying the fire department. Only if a fire appears to be small and easily extinguishable, will personnel attempt to control it with fire extinguishers available in the work area. Otherwise, immediate evacuation of the area is indicated. Should any personnel sustain injury, RFETS Emergency Medical Services (EMS) will be immediately notified. The EG&G emergency number is 966-2911.

Site-Specific Health & Safety Plan
Operable Unit No. 5

Manual:
Section:
Page:
Organization:

RF/ER-94-00045
2.0, Rev. 0
2-5
ER OU 5, 6 & 7 Closures

2.3 ASI OU5 PERSONNEL

- Project Manager: Doug Dennison 980-0036
- Field Operations Lead: Theresa Santangelo 966-6545, 980-0036
- Health and Safety Specialist: Subcontract Personnel 966-6545, 980-0036
- SSO: Ron Hill 980-0036, 980-0036

3.0 HAZARD ASSESSMENT

3.1 INTRODUCTION

The field work that will be conducted at OU5 includes potential chemical, radiological, physical, biological, and mechanical hazards. These potential hazards were identified by reviewing site histories, previous sampling results, and work plans for the operable unit. The Phase I RFI/RI is designed to provide additional information concerning potential hazards associated with each IHSS. The use of standard measures such as PPE, worksite chemical and radiological monitoring, work practice controls, and training should assist in identifying, evaluating, and controlling potential hazards at the work site.

Based on available information about the site, most of the work will be conducted in areas where severity of potential hazards is expected to be low. The potential for encountering chemical or radiological hazards will depend on each IHSS, what types of compounds were disposed at the site, and what work is being performed. Environmental, physical, and biological hazards, such as insects, heat and cold stress, and noise, will likely be encountered to some degree while working in the field. The degree of mechanical hazards resulting from motor vehicle or boat operation, use of heavy equipment, power tools, etc., will also depend on the work being performed. A summary of site activities, hazards, monitoring requirements, and control methods for each IHSS is presented in Table 3-1. (The specific activities to be performed are identified in Appendix C).

ASI functions at OU5 will involve the following operations:

- Non-intrusive operations such as assisting in radiological surveys, overviewing geophysical testing and performing visual inspections. These operations do not disturb the soil and are not expected to approach occupational exposure limits.
- Intrusive operations such as soil gas surveys, sampling surface and subsurface soils, installation of monitoring wells, cone penetrometer tests and BAT sampler installations. These operations disturb soil and have the potential to resuspend contaminated subsurface

soils. The quantities of spoils produced is small. Dust generation is minimized by shoveling the spoils into containers periodically. The Plan for the Prevention of Contaminant Dispersion for OU5 developed by EG&G will address dust emissions and will be complied with by ASI.

3.2 POTENTIAL CHEMICAL AND RADIOLOGICAL HAZARDS

3.2.1 Pathways and Exposure Routes

Pathways of exposure to chemical and radiological hazards are directly dependent upon investigative activities performed at OU5. Exposure to potential health hazards may occur during activities involving soil gas surveys, surface and subsurface soil sampling, drilling activities, groundwater sampling and measurement efforts, and other intrusive activities. Exposure pathways include the following:

- Inhalation of volatile organic compounds, fugitive dust containing metals, and fugitive dust contaminated with radionuclides;
- Skin absorption or contact with volatile organic compounds, or other chemical compounds that may be absorbed through the skin;
- Inadvertent ingestion of low-volatility organic chemicals absorbed to dust particles or fugitive dust contaminated with metals and/or radionuclides; and
- Injection of radionuclides, metals, or other chemical compounds into the body through the skin, e.g., through wounds.

3.2.2 Chemical Hazards

3.2.2.1 Airborne Exposures to Volatile Organic Compounds

Varying concentration levels of volatile organic compounds may exist at sites within OU5. Previous dumping or spill sites of volatile organic compounds where contamination has not been removed will likely have the highest potential for exposure. Exposure may occur during intrusive activities (i.e., soil

gas surveys, soil sampling, borehole installation, monitoring well and piezometer installation, or excavation), which can release volatile organic compounds into the worker's breathing zone. Periodic air monitoring, work practice controls, and the use of respiratory protection will be used as the primary evaluation and control methods to prevent exposure to airborne volatile organic compounds.

3.2.2.2 Skin Exposures to Volatile Organic Compounds

The presence of volatile organic compounds at sites in OU5 could lead to dermal exposures to workers. Dermal exposure could lead to local skin irritation or absorption into the body through the skin. Contamination avoidance and proper use of PPE (clothing and gloves) will be the primary control measures used to prevent skin exposure.

3.2.2.3 Inadvertent Ingestion of Contaminants

The potential exists for workers to be exposed to hazardous chemical compounds through inadvertent ingestion. This exposure route is considered to be remote if site workers follow good personal hygiene measures prior to eating, drinking, or smoking. Eating and drinking are only allowed in the designated support zone.

3.2.3 Radiological Hazards

3.2.3.1 Airborne Exposures to Radiological Hazards

Exposure to radiological hazards could occur through inhalation of fugitive dust contaminated with radiological materials. The degree of potential exposure to airborne radiological hazards is considered unlikely or low depending on the individual work site and amount of airborne dust created at the site. Most all work sites reportedly have low or below background levels of radionuclides and the intrusive activities to be performed usually generate low quantities of airborne dust. Unknown radiological

contamination at the site (e.g., buried contaminated material in the landfill) could lead to unexpected generation of airborne radiological hazards. The use of initial site surveys, air monitoring, work practice controls (e.g., minimizing dust generation), dust control practices, and proper use of PPE and respirators will be the primary evaluation and control measures used to prevent inhalation of radioactive materials.

Action levels for upgrading PPE in response to elevated concentrations of airborne radionuclides will be 1/10 of the Derived Air Concentration (DAC) for the radionuclide(s) believed to be present. Table 9-1 presents local air monitoring trigger levels for the radionuclides that may be present in soil at OU5 IHSSs.

3.2.3.2 Skin Exposures to Radiological Hazards

Radioactive materials identified at sites in OU5 are not readily absorbed through the unbroken skin. Contamination avoidance, decontamination, and proper use of protective clothing and gloves will be the primary control methods used to prevent skin contamination.

3.2.3.3 Inadvertent Ingestion of Radionuclides

Ingestion of radionuclides is possible during OU5 site work. The potential for exposure via this pathway is considered to be remote if good personal hygiene practices are followed prior to eating, drinking, or smoking. No eating, drinking, smoking or chewing of tobacco, or chewing gum will be allowed in the Contamination Reduction Zone (CRZ) or the Exclusion Zone (EZ).

3.2.3.4 Puncture Wounds

Radiological materials could enter the body through breaks in the skin caused by a cut, laceration, puncture, abrasion, or burn. This route of entry can be controlled by complying with safe work practices to prevent accidents. If accidents occur possibly leading to radiation exposure, appropriate ROI 2.3 or EMRG 2.3 procedure will be implemented.

3.2.4 Metals Contamination Hazards

3.2.4.1 Pathways and Exposure Routes

The concentration of metals throughout OU5 will be more fully evaluated during the remedial investigation. Normal background levels have not yet been established. However, some metals have been detected above the Contract Required Quantitation Limit (CRQL), the quantitation limit set forth in the USEPA's Contract Laboratory Program (CLP), and may pose a health hazard depending on the metal present and the concentration.

3.2.4.2 Inhalation or Ingestion Exposure to Fugitive Dust Contaminated with Metals or Asbestos

Workers could be exposed through inhalation or inadvertent ingestion of fugitive dust contaminated with metals or asbestos during intrusive activities. These activities, along with weather conditions, could cause dust entrainment into the air and subsequently into the workers' breathing zone. Metals or asbestos can be ingested into the body by poor personal hygiene practices prior to eating, drinking, or smoking.

The degree of potential exposure from contact with metal or asbestos contaminants during investigation activities in OU5 is believed unlikely or low, depending on the work activity and individual work location. The use of air monitoring, work practice controls (e.g., minimizing dust generation and personal hygiene), and proper use of PPE and respirators will be used as the primary evaluation and control methods to prevent inhalation or ingestion of metals and asbestos.

3.3 PHYSICAL HAZARDS

Workers at sites within OU5 are potentially subjected to physical stresses, including heat and cold stress and noise exposure. Investigative activities may take place during a wide range of weather conditions leading to possible heat or cold stress conditions. Unacclimatized workers or workers wearing

impermeable personal protective clothing during warm weather may be susceptible to heat stress. High noise exposure is possible when operating power tools and mechanized equipment.

3.3.1 Cold Exposure

When working outdoors in temperatures below freezing, workers are susceptible to frostbite. Exposure to extreme cold can cause severe injury to the body surface or can result in profound generalized cooling, causing death. In cold weather, precautions should be taken to prevent cold exposure by wearing properly insulated garments and taking warm-up breaks in temperature controlled areas when necessary. Symptoms of cold exposure include the following:

- Incipient frostbite or frost nip, characterized by sudden blanching or whitening of the skin.
- Superficial frostbite, which causes the skin to become waxy or white and superficially firm, but resilient beneath.
- Deep frostbite, characterized by cold, pale, solid skin tissues.
- Systemic hypothermia, caused by exposure to freezing or rapidly dropping temperature. Symptoms are usually exhibited in stages. These include shivering, apathy, listlessness, sleepiness, rapid cooling of the body temperature to less than 95° Fahrenheit (°F), unconsciousness, glassy stare, slow pulse and slow respiratory rate, freezing of the extremities, and death.

3.3.2 Heat Stress

A worker's risk for developing heat stress is greatly increased when wearing impermeable, personal protection clothing. This type of clothing limits the body's normal heat exchange mechanisms and increases energy expenditure. A program to recognize potential heat stress situations, prevent episodes, and control hazards will be implemented where necessary when adjusted air temperature exceeds 72.5°F. Appendix B provides additional guidance for the prevention, monitoring, and treatment of heat stress.

3.3.3 Noise Exposure

Workers may be exposed to high noise levels during investigative activities at OU5, primarily from drill rigs and other mechanized equipment in use at the site. Noise exposure will be controlled to levels below those stipulated in Table 3-2, or adequate hearing protection will be required for exposed personnel. Employees exposed to noise levels in excess of levels shown in Table 3-2 will participate in the ASI Hearing Conservation Program.

3.3.4 Drill Rig Operations

The following paragraphs describe the hazards associated with operation of drill rigs. Although inherently safer than drilling, cone penetrometer testing and installing well points will be subject to the same guidelines as drilling as specified in this section. Although ASI personnel will not be operating drill rigs, it is necessary that those personnel who will be performing other activities in the proximity of a drill rig be aware of the hazards associated with drilling operations. The ASI-subcontractor providing drilling services will prepare a health and safety plan governing the activities of its employees.

Drill Rig Maintenance/Condition

Drill rig maintenance is the responsibility of the ASI-subcontractor. Subcontractors must only use equipment which complies with manufacturers safety and maintenance requirements.

ASI personnel will perform a limited visual inspection to determine that:

- cables are not seriously frayed;
- hydraulic lines are not leaking; and
- auger guides are present on rigs designed to use them.

ASI will also require the driller/driller's helper (drillers) to demonstrate that:

Site-Specific Health & Safety Plan
Operable Unit No. 5

Manual:
Section:
Page:
Organization:

RF/ER-94-00045
3.0, Rev. 0
3-8
ER OU 5, 6 & 7 Closures

- all the kill switch(es) are operational (must be painted red per 29CFR 1910.144(a)(iii)); and
- the back-up warning device is operational.

Equipment which does not meet the above requirements are deemed to be unsafe and are not approved for use on ASI projects. If other items appear to be a hazard, they will be brought to the attention of the drillers for assessment. The notification will be documented in the logbook along with actions taken (including no action).

Special Considerations

The ASI sampling team leader or designee is responsible for examining the rig to determine if grease, oil or other materials, commonly used for drilling, may interfere with the environmental analyses which are to be performed on collected samples. Special greases made from vegetable fat may be required in some instances.

Hazards Associated With Drill Rig Operations

Underground Hazards

Prior to initiating drilling operations, ASI will clear borehole locations in accordance with EG&G SOP GT.10.

Fire and explosion hazards may be present if containerized chemicals are present underground (geophysical testing will be performed if there is doubt about the presence or location of underground structures or containers). No drilling is permitted in areas where explosion potential exists (i.e. metal masses have been detected using geophysical methods). If there is potential for drums to be buried more than 8 feet below the surface, periodic down-hole tests will be required to prevent drilling into metallic containers.

Clothing

Loose-fitting or bulky clothing should not be used in the immediate vicinity of the rotating auger. The auger can snag the clothing and pull the operator into the rig.

Grout

Grouts often use volclay or other materials containing crystalline silica. Drillers are expected to use respiratory protection while mixing grout unless the drilling company has documentation which indicates that crystalline silica concentrations do not exceed 0.05 mg/m³ as an 8-hr TWA. Note: NIOSH lists crystalline silica as a carcinogen and recommends that exposures be kept as low as practical. MSDSs for all materials used are required to be provided to the HSS.

Lightning

Drill rigs act as a lightning rod. If lightning is seen anywhere on the horizon, drilling operations will be discontinued.

Noise

Noise may be in excess of the levels set by OSHA during certain operations such as driving a split spoon.

Noise monitoring will be conducted determine if noise levels exceed action levels of 85 dBA continuous or 140 dBA impulse. Hearing protection is required to be worn when noise levels exceed 85 dBA. Ear plugs and ear muffs will be worn when impulse noise exceeds 140 dBA impulse.

If the noise levels are not documented to be below 85 dBA during normal operations and 140 dBA during hammering operations, noise levels will be assumed to exceed acceptable levels. Ear muffs or foam ear

plugs will be worn during normal drilling and a combination of ear plugs and ear muffs during hammering operations. Hammering operations include split spoon sampling.

Extra effort should be used to remain aware of heavy machinery operations when working with hearing protection, since verbal warnings will be harder to hear.

Overhead Hazards

Minimum clearances are required when working near energized power lines:

- 10 feet from a 50 KV or less line;
- 20 feet from a 50 KV to 345 KV line; and
- 34 feet from a 345 KV to 750 KV line.

When working near buildings, branches, bridges, etcetera, the drill rig needs to have enough room for the mast to be raised safely. The minimum safe radius is equal to the maximum mast height plus at least 5 feet. If buildings or pipes are directly overhead, additional height may be required to provide safe clearance while raising A-rods and augers above the mast height. The team leader should coordinate with the drilling company to determine the clearance requirements for the specific rigs to be used.

Rain

Rain on the cathead makes the cathead slippery and dangerous. Outdoor operation of catheads is not permitted in rain.

Wind

If sustained winds reach 30 mph, all materials and/or debris will be secured. Drilling will continue if determined safe by EG&G health and safety personnel. If sustained winds reach speeds at or above 45 mph, drilling activities will be discontinued until winds calm.

Slippery Surfaces

Slippery surfaces may be present in the immediate vicinity of the auger. The slippery surfaces are due to clay-like particulates which have been wet by groundwater and/or rainwater. Mesh stages on drill rigs can reduce the hazard substantially.

Volatile Chemical Hazards

If there is potential for volatile chemicals, monitoring must be performed as specified in the site specific safety plan. Breathing zone measurements will be used to determine the required level of respiratory protection. Down hole and soil surface measurements will be used to provide advanced warning that concentrations may increase in the breathing zone.

Non-Volatile Chemical Hazards

Non-volatile chemical hazards will be conservatively estimated using real time instruments, or assumed to be present, for the purposes of selecting personal protective equipment. Non-volatile chemicals include heavy metals, PCBs, pesticides, etcetera.

If the non-volatile concentration exceeds one-half of the occupational exposure limit, industrial hygiene sampling will be required to determine the actual concentration present.

Site-Specific Health & Safety Plan
Operable Unit No. 5

Manual:
Section:
Page:
Organization:

RF/ER-94-00045
3.0, Rev. 0
3-12
ER OU 5, 6 & 7 Closures

Exclusion Zone

Personnel are not authorized to enter the exclusion zone unless their job requires them to be present and they meet or exceed the requirements specified in the site-specific safety plan for medical monitoring training and personal protection.

The exclusion zone for drilling rig operations has three components: the area of chemical hazards, the area near moving parts, and the area where cables and augers are being moved. As a minimum, the exclusion zone extends to a radius equal to the length of the extended mast, plus the length that rods, or augers extend beyond the mast.

All unessential personnel should be excluded from areas where high levels of contamination exist and/or personal protective equipment is required.

All personnel except the driller and the driller's helper should be excluded from a four foot (4') radius of the rotating auger. Safety personnel and geologists are permitted to enter the four foot radius only after the auger has stopped rotating.

All personnel except the driller and the driller's helper should be excluded from the area behind the rig where augers are "run-out" and placed on the ground or on devices which keep the augers off the ground.

Procedures

- No drilling is permitted until utility locators (or testing) have determined that utilities are not located in the area to be penetrated.
- Drilling is not permitted in areas having buried drums or tanks until geophysical testing has confirmed that they are absent in the area to be drilled. Procedures are available to extend the depth of detection.

- Drill rigs with inoperable or disabled safety equipment will not be used.
- Only experienced drill rig operators are authorized to operate the drill rig.
- No one but the drillers should be within 4 feet of the rotating auger.
- Monitoring should be performed during periods of auger change or when the auger is stopped.
- The drilling crew is responsible for maintaining the drill rig and stopping work if unsafe conditions develop.
- The exclusion zone will include the area immediately behind the rig. This area is used by drillers to "run-out" auger flights as they are being added or removed from the rig.

Health and Safety Specialist Responsibilities

The ASI HSS is responsible for ensuring:

1. The drilling crew demonstrates to the field team that the kill switch(s) is functional, and shows its location. No drilling is to be permitted if the kill switch is not operational, or if all members of the field crew are not familiar with its location and operation.
2. That auger guides are used where applicable.
3. That the personal protective equipment specified in the safety plan is used.
4. A minimum of two persons are present at the drill rig at all times of operation.
5. That First Aid/CPR is immediately available during periods of drill rig operation.
6. Respiratory protection is worn when conditions warrant it. Personal protective equipment impairs the operator's vision. Gloves and other safety equipment can make "normal operations" more difficult to perform. Unnecessary use of respiratory equipment should not be required. If a driller feels more comfortable using respiratory protection to reduce exposures that will not exceed the published exposure levels, he must be aware of the increased physical hazards.
7. At least 5 feet of clearance is maintained on all sides of the drill rig for emergency egress.

8. That equipment is decontaminated according to procedures outlined in the EMRG and that equipment leaving a potentially contaminated area is surveyed according to Sections 7.0 and 9.0 before being released from the site.

Personal Protective Equipment (PPE)

Personal protective equipment should include:

- hard hat
- respiratory protection as needed
- eye protection such as safety glasses or goggles (if full face respirator not used)
- hearing protection
- coveralls (cotton, Tyvek or Saranex)
- safety boots
- gloves

Monitoring

- Noise
- Chemical Contaminants
- Radioactive Contaminants

Decontamination

Decontamination of all drilling equipment will be performed in accordance with EG&G SOPs FO.09, FO.10, FO.11 and FO.18. All ASI and ASI-subcontractor personnel performing decontamination at the Main Decontamination Facility (MDF) will receive documented training in the use of this facility.

3.4 BIOLOGICAL HAZARDS

Biological hazards that may be present at RFETS include plants, insects, and snakes. Considerations for potential biological hazards may be necessary when workers are required to enter remote or seldom-visited locations.

The potential for contact with snakes or insects that may cause injury or disease exists when performing investigative activities at RFETS. The RFETS does not host any plants that are poisonous to humans, other than poison ivy. There are some plants that may be mechanically injurious (i.e.-thorns). Field personnel will wear sturdy work clothes and shoes in order to help prevent injuries.

There is one type of venomous snake present in the RFETS area, i.e., the prairie rattlesnake. Personnel should be aware that snakes may be present in the area and exercise caution, especially when working in previously undisturbed areas and locations with animal dens.

Black widow spiders and scorpions may be present on site. They are usually found in shady places or under rocks or wood. The black widow spider has a shiny black body about the size of a pea, with a red or yellow hourglass-shaped mark on its back. It weaves shapeless webs in undisturbed areas. A bite may result in severe pain, illness, and possibly death from complications, but usually not from the bite itself. There are several types of scorpions native to Colorado. Scorpions may be brown to yellowish in color, and range from 1/2 inch to 8 inches in length. Their bodies are divided into two parts - a short, thick, upper body, and a long abdomen with a six-segmented tail. A scorpion has six pairs of jointed appendages - one pair of small pinchers, one pair of large claws, and four pairs of jointed legs. They are most active at night. A scorpion sting is very painful, but usually will not result in death.

In addition to spiders and scorpions, ticks, chiggers, bees, and wasps may be nuisances to field personnel. Bites from wood ticks may result in the transmission of Rocky Mountain Spotted Fever, a serious and possibly fatal viral disease. The Rickettsia virus infects wood ticks, mostly in the late spring and early

summer, and is characterized by chills, fever, severe pain in leg muscles and joints, and a body rash. Lyme Disease is not prevalent in Colorado. Some protection will be offered by PPE, but the use of insect repellent (containing at least 30% DEET) on outside clothing and exposed skin also may be warranted. Personnel should perform self-searches after each day to check for ticks and chiggers. Bees or wasps can be considerable hazards for those people with allergic reactions to venom. The ASI HSS should be notified if any worker is sensitive to these insects. Properly trained personnel will administer first aid should a bee or wasp sting occur.

3.5 MECHANICAL HAZARDS

Workers may be exposed to potential mechanical hazards during the investigative activities at OU5. Hazards and methods of hazard control are detailed in Section 3.3.4. Site inspections will be conducted periodically by the ASI HSS to assess hazards according to standard health and safety protocols.

3.6 POTENTIAL CHEMICAL OR RADIOLOGICAL HAZARDS AND CONTROL METHODS SUMMARY

Each IHSS in OU5 is discussed below. Site background summaries are compiled from existing data in the OU5 Phase I RFI/RI Work Plan and previous sampling reports. Potential chemical and radiological hazards listed are based only on these data or known past use of the site. The control measures listed are meant to be the minimum control measures required for initial work at the site. Additional control measures may be necessary as determined by site health and safety personnel. As additional site data become available through site monitoring or investigations, the control measures may need to be altered. The decision to alter the control measures should be made only by knowledgeable health or safety professionals responsible for site activities.

3.6.1 Original Landfill (IHSS 115)

3.6.1.1 Site Background Summary

Other than general plant wastes, chemicals that may have been placed in this landfill include commonly used solvents, such as trichloroethylene, carbon tetrachloride, tetrachloroethylene, petroleum distillates, 1,1,1-trichloroethane, dichloromethane, benzene, paint and paint thinners. Metals such as beryllium, uranium, lead, and chromium may also be present. Radiological surveys conducted over the landfill indicated that most detected radioisotopes present were consistent with natural background. However, there was evidence of soil disturbances with elevated concentrations of uranium-238 at these disturbances. The highest concentration noted was 19.0 picocuries per gram (pCi/g) of U-238. Groundwater sampling data in the vicinity of the landfill show that metals and radionuclides were detected at levels no more than ten times background. Acetone and methylene chloride were the only organic compounds found in groundwater that were in concentrations higher than background levels. However, the concentrations were in the parts per billion (ppb) range, and should not present a hazard to site personnel.

3.6.1.2 Anticipated Work Activities

ASI personnel will conduct nonintrusive activities such as project management, site inspection, air sampling and radiation monitoring activities at the site. Personnel will also participate in intrusive activities such as soil gas surveys, subsurface soil sampling, cone penetrometer testing, and well installation. Work activities to be conducted at the site are summarized in Table C-1, Appendix C.

3.6.1.3 Potential Chemical or Radiological Hazards

The primary hazards associated with environmental activities at this site are anticipated to be dermal exposure or inhalation of volatile organic compounds and metals, and inhalation of radionuclides. Because this site is an old landfill, intrusive activities which contact and release buried contaminated materials will

have the highest potential for causing personnel exposure. This potential can be controlled by implementing procedures for avoiding contact with contaminated materials (PPE and radiation and geophysical surveys) and real-time air and radiological monitoring to detect potential worker contact with contaminated materials.

3.6.1.4 Control Measures

Level D protection including EG&G-furnished gray coveralls, hereinafter referred to as "cotton coveralls," safety boots, eye protection, and hard hats (when overhead hazards are present) will be worn during work for all nonintrusive site activities as specified in the EMRG. In addition to the Level D protection listed above, surgeon inner gloves, and appropriate outer gloves (such as nitrile), and steel-toed chemical resistant boots will be worn during intrusive activities at the site. Monitoring for volatile organic compounds as an indicator of potential chemical contamination will be conducted during intrusive activities at the site. Combustible gas monitoring will be conducted in boreholes during intrusive activities in the landfill. If natural gas concentrations reach or exceed the lower explosive limit down-hole, down-wind measurements will be made to determine if sufficient gas is being released to affect site personnel. Table 3-3 provides action limits for monitoring activities.

Radiological screening and monitoring in accordance with EG&G SOP FO.16 will be performed during intrusive work. Appropriate geophysical methods such as ground penetrating radar, electromagnetic surveys, magnetic surveys, or use of metal detection equipment will be used to minimize the risk of contacting buried containers, drums and contaminated materials in the landfill. Alternate drilling approaches such as remote drilling or hydraulic drive sampling may be necessary where geophysical methods are not adequate to minimize buried hazard risks. Decontamination procedures as discussed in Section 7.0 will be followed for personnel and general and heavy equipment according to SOP FO.03 and SOP FO.04, respectively.

3.6.2 Ash Pits 1-4 (IHSSs 133.1, 133.2, 133.3, 133.4), Incinerator (IHSS 133.5) and Concrete Wash Pad (IHSS 133.6)

3.6.2.1 Site Background Summary

The history of the Ash Pits, Incinerator area, and Concrete Wash Pad is not entirely known because few records were kept of their operations. It is known, however, that general combustible wastes from the RFETS facility were burned in the Incinerator along with an estimated 100 grams of depleted uranium. The ashes from the Incinerator were disposed in the Ash Pits. At the Concrete Wash Pad Area (IHSS 133.6), potentially contaminated materials consist of concrete debris and occasional ashes from the Incinerator that were reported to have been pushed over the side of the hill onto the Concrete Wash Pad area.

There is no soil sampling data available for the Ash Pits. However, an estimated 100 grams of depleted uranium were burned in the incinerator, and the ashes from the incinerator were disposed of in the Ash Pits. Oxides of depleted uranium could be present in the Ash Pits and represent a potential metals inhalation hazard. The radiological hazard to site workers associated with depleted uranium is considered negligible. The groundwater data for the vicinity of the Ash Pits reveals that methylene chloride was detected above the CRQL, in the ppb range. This concentration level should not present a hazard to site personnel.

Metals contamination above the CRQL were reported in the groundwater at a location downslope of the Ash Pits. Metals such as calcium, magnesium, and sodium were found in the part per million (ppm) range. Lead and arsenic were found in the ppb range. These concentrations should not present a hazard to environmental investigation personnel.

Low levels of radionuclides were detected above background levels in groundwater samples near the Ash Pits as defined by the 1991 Rocky Flats Environmental Technology Site, Site Environmental Reports. The

highest detected values were americium-241 at 0.09 pCi/L, plutonium-239 at 0.28 pCi/L, strontium-90 at 1.3 pCi/L, uranium-233/234 at 1.974 pCi/L, and gross beta at 88 pCi/L.

During ASI field investigations in March 1993, drilling activities revealed a suspected asbestos-containing material (ACM). Subsequent laboratory analysis showed that the sample had 1 to 5 percent asbestos. Further anecdotal information revealed that the incinerator parts were also buried here, and that the incinerator may have had an ACM cementitious insulation jacket. Due to the low percentage of asbestos in the sample (Note: 1 percent asbestos is used by EPA to define an asbestos containing material), and the relatively low quantity of drilled material involved, airborne asbestos exposures greater than the OSHA PEL (0.2 f/cc TWA; and 0.1 f/cc 30-minute excursion) are not expected to occur. Also, dust suppression using water will be utilized for drilling and other activities, when practicable, to further control airborne particulates.

As a precaution, ASI will implement use of Level C PPE for initial drilling in areas suspected of having ACM. Air monitoring will be conducted to characterize the work areas for airborne asbestos. ASI will utilize one-half of the OSHA PEL and one-half of the excursion limit as triggers for requiring Level C PPE.

Since the potential ACM is expected only within the pit, Level C usage will be downgradient to Level D when drilling has advanced beyond the bottom of the pit (15 feet), or at the bedrock contact, whichever is encountered first, and no ACM has been encountered. When grouting the boreholes, Level C will only be required when ACM has been encountered during drilling.

3.6.2.2 Anticipated Work Activities

ASI personnel will conduct nonintrusive activities such as project management, site inspection, air sampling, and radiation monitoring activities at the site. Personnel will also participate in intrusive

activities such as soil sampling and well installation. Work activities at the site are summarized in Table C-2, Appendix C.

3.6.2.3 Potential Chemical or Radiological Hazards

The primary hazards associated with environmental contamination at this site are anticipated to be dermal exposure or inhalation of volatile organic compounds and metals, or possible inhalation of radionuclides. The potential for this occurring is considered to be low based on the work activities to be performed, work practices, probable low concentration of contaminants in the soils, and known low concentration of contaminants in the groundwater.

3.6.2.4 Control Measures

Level D protection including cotton coveralls, safety boots, eye protection, and hard hats (when overhead hazards are present) will be worn during work for all nonintrusive site activities. In addition to the Level D protection listed above, surgeon inner gloves, and appropriate outer gloves (such as nitrile), and steel-toed chemical resistant boots will be worn during intrusive activities at the site. Monitoring for total dust and volatile organic compounds as an indicator of potential chemical contamination will be conducted during intrusive activities at the site. Radiological screening and monitoring in accordance with EG&G SOP FO.16 will be performed during intrusive work. Action Limits are presented in Table 3-3. Decontamination procedures as discussed in Section 7.0 will be followed for general and heavy equipment. Face and hands will be washed after leaving the site and before eating, drinking, or smoking.

3.6.2.5 Handling and Disposal of ACM Waste and Samples

At sites with ACM, cuttings and disposable PPE will be disposed of as ACM waste. This ACM waste will be double-bagged, and placed in specially marked drums (with appropriate ACM warning labels) obtained from EG&G. The bags will be special ACM bags, or bags with an ACM warning label attached. EG&G will arrange for disposal of this ACM.

In order to confirm the presence of ACM, close visual inspections will be routinely performed on the drill cuttings during the drilling operation. The suspicion of any ACM in the cuttings based on the visual observations will trigger the ACM waste disposal handling as described above. When ACM is suspected, a sample from the cuttings will be collected, and sent to a laboratory for ACM analysis. If the analysis shows 1 percent or greater ACM, the waste will be disposed of as ACM waste. If the analysis is less than 1 percent, the cuttings and PPE will be handled in the normal fashion for the OU5 site.

Samples of soil, cuttings, or other media that are taken from an ACM site, and which are transported off-site for storage or analysis or for other purposes, must be identified with an appropriate ACM label on the sample container. ACM samples will be disposed of as ACM waste at the site, or at the laboratory.

3.6.3 Ponds C-1 and C-2 (IHSSs 142.10 and 142.11)

3.6.3.1 Site Background Summary

Detention Pond C-1 receives surface water from Woman Creek with little runoff received from the plant site. Pond C-2 receives the runoff from the southern plant facilities via the SID.

Several studies have been conducted pertaining to the analysis of water and sediment samples from Detention Pond C-1 and C-2 along the Woman Creek drainage. Sediment sampling data reveal that few organic compounds were detected above the CRQL. These organics include toluene, chloroform,

trichloroethene, chloromethane, phenol, carbon disulfide, bis(2-ethylhexyl) phthalate (a common laboratory contaminant) and hexachlorobenzene. These organics were detected at concentrations levels in the ppb range.

Low levels of radionuclides were detected above background levels in sediment samples near the Ponds. The highest detected values were: plutonium-239/240 at 0.869 pCi/g, radium-226 at 3.405 pCi/g, radium-228 at 3.405 pCi/g, uranium-233/234 at 3.686 pCi/g, uranium-238 at 3.820pCi/g, americium-241 at 0.160pCi/g, cesium-137 at 1.400pCi/g, plutonium-239 at 0.040 pCi/g, and plutonium-238 at 0.015 pCi/g.

Surface water sampling data reveals that some organic compounds are above the CRQL, but are in very low concentrations (ppb levels). These compounds include 1,2-dichloroethane, 2-butanone, acetone, methylene chloride, trichloroethane, carbon tetrachloride, and chloroform.

Surface water samples taken along Woman Creek and in Ponds C-1 and C-2 have shown low concentrations of plutonium, uranium, tritium, and americium. Concentrations of these radionuclides have been consistently less than 2 percent of the Derived Concentration Guide for water available to members of the general public.

Elevated metal concentrations were reported from several surface water sampling locations in the vicinity of the Ponds. Metals such as calcium, sodium, iron, and aluminum were found in the ppm range. Mercury and lead were found in the ppb range. These concentrations should not present a hazard to environmental investigation personnel.

3.6.3.2 Anticipated Work Activities

ASI personnel will conduct nonintrusive activities such as project management, site inspection, air sampling, and radiation monitoring activities at the site. ASI personnel will also perform intrusive work including well installation. Work activities at this site are given in Table C-3, Appendix C.

3.6.3.3 Potential Chemical or Radiological Hazards

The primary hazards associated with environmental work at this site are anticipated to be dermal exposure or inhalation of volatile organic compounds and metals, or possible inhalation of radionuclides. The potential for this occurring is considered to be low based on the work activities to be performed, work practices, and the low concentration of contaminants in the surface water and sediments, and probable low concentrations of contaminants in the groundwater near the ponds.

3.6.3.4 Control Measures

Level D protection including cotton coveralls, safety boots, eye protection, and hard hats (when overhead hazards are present) will be worn during work for all nonintrusive site activities. In addition to the Level D protection listed above, surgeon inner gloves, appropriate outer gloves (such as nitrile), and steel-toed chemical resistant boots will be worn during intrusive activities at the site. Monitoring for volatile organic compounds as an indicator of potential chemical contamination will be conducted during intrusive activities at the site. Radiological screening and monitoring in accordance with EMD Operating Procedures FO.16 and Sections 7.0 and 9.0 will be performed during intrusive work. Action Limits are presented in Table 3-3. Decontamination procedures as discussed in Section 7.0 will be followed for general and heavy equipment.

3.6.4 Surface Disturbance (IHSS 209) and Other Surface Disturbances

3.6.4.1 Site Background Summary

No previous investigations have been reported near IHSS 209, the surface disturbance west of IHSS 209, or the surface disturbances south of the Ash Pit area. In addition, there are no nearby groundwater monitoring wells that can provide data on these areas. Based on past aerial photographs and the location of the site, it is not believed that the site was used for waste disposal operations and may not contain

hazardous materials. During the investigation of OU1, drilling was performed near IHSS 209 and real-time monitoring results did not show elevated levels of volatile organics and surface radiological contamination of personnel or equipment.

3.6.4.2 Anticipated Work Activities

ASI personnel will conduct nonintrusive activities such as project management, site inspection, air sampling, and radiation monitoring activities at the site. ASI personnel will also participate in intrusive activities such as surface and subsurface soil sampling. Work activities at this site are given in Table C-4, Appendix C.

3.6.4.3 Potential Chemical or Radiological Hazards

The primary hazards associated with environmental contamination at this site are anticipated to be dermal exposure and inhalation of contaminated dust and volatile organic compounds or inhalation of possible radionuclides. The potential for these occurring is unknown based on the limited history of the site. The work activities at the site should not generate significant amounts of airborne dust and the concentration of contaminants at the site could be low or nonexistent. Work practice controls and real-time monitoring of the site should be stringently enforced to prevent possibility of potential worker exposure to unknown chemical or radiological hazards.

3.6.4.4 Control Measures

Level D protection including cotton coveralls, safety boots, eye protection, and hard hats (when overhead hazards are present) will be worn during all nonintrusive site activities. In addition to the Level D protection listed above, surgeon inner gloves, and appropriate outer gloves (such as nitrile), and steel-toed chemical resistant boots will be worn during intrusive activities at the site. Monitoring for total dust and volatile organic compounds as an indicator of potential chemical contamination will be conducted during

Site-Specific Health & Safety Plan
Operable Unit No. 5

Manual:
Section:
Page:
Organization:

RF/ER-94-00045
3.0, Rev. 0
3-26
ER OU 5, 6 & 7 Closures

invasive activities at the site. Radiological screening and monitoring in accordance with EG&G SOP FO.16 and the EMRG Section 2.1 will be performed during intrusive work. Action limits are presented in Table 3-3. Decontamination procedures as discussed in Section 7.0 will be followed for general and heavy equipment in accordance with SOP FO.03 and SOP FO.04. Face and hands will be washed after leaving the site and before eating, drinking, or smoking.

3.6.5 Storm Sewer Video Camera Inspection

The storm sewer video camera inspection work is described in IWCP #TR056242. A Job Safety Analysis was prepared on December 9, 1992. Safety precautions, e.g. use of combustible gas indicator for pre-entry testing, are described in these documents.

Site-Specific Health & Safety Plan
Operable Unit No. 5

Manual:
Section:
Page:
Organization:

RF/ER-94-00045
4.0, Rev. 0
4-1
ER OU 5, 6 & 7 Closures

4.0 HAZARD COMMUNICATION

4.1 INTRODUCTION

ASI personnel must follow established work practices to safely handle hazardous chemicals. A hazardous chemical is broadly defined as "a chemical that is either a health hazard, a physical hazard or both." The implementation of a hazard communication program is also required by 29 CFR 1910.120 for RCRA treatment, storage, and disposal facilities. ASI will maintain an inventory of hazardous chemicals stored onsite and Material Safety Data Sheets (MSDS) for those chemicals that will be available to employees at the site.

4.2 HAZARDOUS MATERIALS INVENTORY

ASI will compile an inventory of hazardous chemicals present at their work sites or trailer areas and provide this information to EG&G. The inventory may be requested by emergency response personnel to aid in identifying hazards associated with a spill or accident at the site. Radiological check sources and/or reference sources must also be included in this inventory including applicable calibration certificates.

4.3 MATERIAL SAFETY DATA SHEETS

The MSDS must be readily available to employees for hazardous chemicals used or stored at the site. Information found on a MSDS includes identification of the product's hazardous chemical constituents, its physical characteristics, applicable exposure limits, symptoms of overexposure, recommended PPE, fire and explosion hazards, and spill response actions. This information is provided by the manufacturer and is typically included with the shipment of the chemical. The EG&G Industrial Hygiene Department maintains a master file of MSDS for materials stored or used at the plant. A complete file of MSDS for

Site-Specific Health & Safety Plan
Operable Unit No. 5

Manual:
Section:
Page:
Organization:

RF/ER-94-00045
4.0, Rev. 0
4-2
ER OU 5, 6 & 7 Closures

hazardous chemicals used at OU5 will be kept at the ASI project trailers and readily available to site employees.

4.4 TRAINING

ASI personnel are required to complete Hazard Communication training as part of their 40-hour OSHA training. Specific training on the information provided in the MSDS will be conducted by the ASI HSS, or, if necessary, by a representative of EG&G Industrial Hygiene.

5.0 SITE CONTROL

5.1 OBJECTIVES

The purpose of this site control plan is to protect workers, the public, and the environment from the potential hazards associated with the OU5 RFI/RI work. The terms "site control" and "controlled" versus "uncontrolled" are used in this section in the context of hazardous waste sites. This OSHA terminology does not necessarily apply to formal radiological definitions used in RFETS production facilities.

In addition to general site control measures required under the 29 CFR 1910.120, activities conducted at OU5 shall be conducted in accordance with the EG&G Integrated Work Control Program (IWCP). ASI personnel will adhere to requirements of the IWCP where applicable. A radiation work permit may also be required as part of the IWCP in areas where suspected radionuclides exist. Information required for the radiation work permit includes job information, description of hazards, radiological and nonradiological safety requirements, preparation for the job, approval signatures, and permit duration.

5.2 SITE CONTROL DESIGNATIONS

Two site control designations are used for potentially hazardous locations at OU5. The work location itself is designated as an Exclusion Zone (EZ) and the staging area outside a work location is designated as a Contaminant Reduction Zone (CRZ). Access to these areas will be controlled. Personnel working in the areas must meet specific training requirements, be participants in a medical surveillance program, and wear required PPE. Minimum requirements for access to these designated areas are summarized below. Detailed PPE, training, and decontamination requirements are presented in the respective sections of this SSHSP.

5.2.1 Exclusion Zone

During investigative activities at OU5, an EZ will be established by ASI personnel conducting work at the site. An entire IHSS may be designated as an EZ during investigations if necessary. As a minimum, individual work areas (drill sites, excavation sites, sample areas, etc.) inside of the IHSS will be designated as an EZ. The limits of these zones and the PPE requirements within the zones will be based on the hazards of the work being conducted, as determined by the appropriate health and safety representative. Environmental samples collected at these sites may contain elevated levels of radiological and/or chemical contaminants. Personnel entering these areas will be required to wear appropriate PPE. When leaving these areas, decontamination procedures (described in Section 7.0) will be followed where required, including clearance by approved ASI health and safety personnel.

In addition, radiation site control measures may be implemented in OU5. The site control designations are a "radiologically controlled area" and a "contaminated area." This classification is based on the activity or procedure to be performed and/or the level of possible exposure/contamination to the worker.

Radiological site control designations include the following:

- A "radiologically controlled area" is designated when the contamination levels are below established standards, but radiological precautions may be necessary to alert workers of potential hazards.
- A "contaminated area" is designated when contamination is elevated above permissible levels. When elevated levels occur, the controlled area is also posted as a contaminated area. All contamination levels shall be maintained within acceptable limits by using appropriate control methods and kept as low as reasonably achievable (ALARA). All contaminated waste shall be properly contained and properly identified.

5.2.2 Contaminant Reduction Zone

Adjacent to the site- or task-specific EZ will be the CRZ, where appropriate measures will be in effect to reduce the potential for spreading contamination via the workers and equipment. The entrance, exit, and decontamination area adjacent to the EZ will be designated as a CRZ. All personnel conducting or supervising activities in this area are required to have appropriate training.

5.2.3 Support Zone

The Support Zone will be outside the CRZ and will be the area where support workers will provide assistance to workers inside the EZ and CRZ. The Support Zone will begin at the exit from the decontamination line. Only clean or appropriately containerized equipment or material will be allowed to exit into the support zone from the CRZ. Visitors and observers will comply with the site control designations and the zone requirements established at the work site. Visitors will not be allowed to enter the EZ and/or CRZ without training as required in Section 10.0 of this SSHSP.

5.3 GENERAL OPERATING PROCEDURES

Personnel will not conduct work activities at OU5 alone. They will be accompanied by either another ASI employee or ASI-subcontractor employee. The buddy system, as specified in 29 CFR 1910.120 (d)(3), will be implemented at the site. The buddy teams working at the site will maintain visual and audible contact so that they can provide emergency assistance to each other, if needed. Both members of the buddy team need not be in the same site zone, but each member must be wearing adequate PPE to assist the other, if necessary.

The communication system at the site consists of telephones and hand-held radios. ASI personnel will have access to telephones in the ASI project trailers in the subcontractor trailer area, and when at OU5, they will rely on the hand-held radio system used by personnel performing the investigative work.

5.4 PLAN FOR PREVENTION OF CONTAMINANT DISPERSION

5.4.1 Objective

The objective of the Plan for Prevention of Contaminant Dispersion (PPCD) is to establish procedural requirements to mitigate potential hazards to the general public as a result of contact with emissions resulting from intrusive remedial investigation activities.

5.4.2 Scope

Procedural requirements for the prevention of contaminant dispersion, applicable to intrusive actions conducted at OU5 work sites as part of the RFI/RI activities described in the IAG, will be described in the PPCD for OU5 prepared by EG&G. Intrusive activities that fall within the scope of this PPCD are those with the potential for producing suspended particulate, primarily through mechanical actions. Intrusive activities susceptible to producing appreciable quantities of suspended particulate include:

- Monitor well and soil/rock borehole installation
- Excavations (such as trenching and test pitting) using powered equipment.

Additionally, heavy vehicular traffic associated with RFI/RI activities will be considered susceptible to producing appreciable quantities of suspended particulate. By contrast, activities such as surface soil sampling with hand implements may not be considered susceptible to producing appreciable quantities of suspended particulate.

6.0 PERSONAL PROTECTIVE EQUIPMENT

6.1 INTRODUCTION

Standard procedures for selection, inspection, and use of PPE at OU5 are addressed in this section. The criteria used to determine appropriate levels of protective equipment include evaluation of the task being performed, potential chemical, radiological, and mechanical hazards at the site, monitoring data, effectiveness of engineering controls, and applicable regulations.

A number of federal agencies dictate the need for PPE at hazardous waste sites. Among these agencies are OSHA, EPA, and DOE. Table 6-1 lists the specific OSHA standards that impact the manufacture, selection, and use of PPE.

ASI will evaluate the hazards of the tasks they are to perform and establish adequate PPE levels to protect their employees. EG&G personnel requiring access into areas zoned by ASI as restricted or exclusionary will follow ASI PPE requirements.

A site control plan has been developed to limit access of personnel to OU5 (Section 5.0). In addition, specific historical disposal sites designated in the IAG as IHSSs have been identified at OU5. Because of unique hazards associated with defined tasks, several subcontractors may perform tasks concurrently within an IHSS and require different zoning and PPE.

The actual selection of PPE is a complex matter that must be evaluated by the HSS in conjunction with the SSO. At a minimum, Level D PPE, including safety shoes, Class I eye protection with side shields, and a hard hat (when overhead hazards are present) is required for anyone performing investigation activities at OU5 sites.

6.2 GENERAL APPLICATION OF PERSONAL PROTECTIVE EQUIPMENT

The use of PPE is required when engineering and administrative controls are insufficient to prevent worker exposures to hazardous chemical and radioactive materials. Due to the nature of work performed at OU5, there is a potential for release of vapors and particulates, which cannot be completely controlled at the source. Engineering and administrative controls will be used, when appropriate, to minimize potential exposures; however, the use of PPE may be necessary in maintaining exposure as low as reasonably achievable (ALARA).

6.3 PERSONAL PROTECTIVE EQUIPMENT ISSUES APPLICABLE TO ALL SITE PERSONNEL

All personnel assigned to OU5 must be trained in the proper inspection and use of PPE before beginning work on the site. For workers required to wear respiratory protection, this training requirement is fulfilled through completion of the 40-hour OSHA course discussed in Section 10.0, "Training." All OU5 personnel required to wear a respirator must be medically qualified and fit tested at least annually. The details of ASI's respiratory protection program applicable to OU5 activities are outlined in Appendix D.

All personnel assigned to OU5 must have a current medical clearance issued by a qualified physician for work at a hazardous waste site. This clearance will be updated annually with the employee's physical exam as described in Section 8.0 of this SSHSP.

Workers required to use PPE must do so in buddy teams. The team members are responsible for the inspection of each others' equipment during donning and field use. An inspection checklist is presented in Table 6-2.

Workers experiencing any unusual symptoms of fatigue, dizziness, high body temperature, skin or respiratory irritation, or suspected overexposure should immediately withdraw from the work area and proceed through decontamination. The employee should then notify his/her supervisor, and the incident

should be reported immediately by the supervisor to the EG&G Occupational Health Department and the ASI HSS as appropriate.

Table 6-3 lists the protective clothing requirements for C and D and modified D levels of protection. The table also lists the protection provided by each level, criteria for when the protective equipment should be used, and the limiting factors of the respective protective equipment. These PPE requirements may be altered by a RWP, and the more stringent guidelines will be followed.

6.4 REUSE OF PPE

Tyvek coveralls may be used for the duration of a work period. However, they should be removed and disposed during decontamination whenever a worker leaves the EZ or CRZ according to the procedures described in SOP FO.6, Handling of Personal Protective Equipment. The length of the service life of a respirator cartridge, with activated carbon or other chemical sorbing element, will be determined by the following criteria:

- Dispose of at the end of the day;
- Breathing resistance is excessive; and
- Chemical odors are detected by the worker.

Respirators should be frisked before cleaning. If contamination is discovered on the exterior of the respirator, it should be removed before washing or disinfecting the face piece. (Head should also be frisked if respirator is found to be contaminated.) Respirators should be wiped clean by site personnel as they are removed. They must be stored and sealed in a plastic bag, and in a manner to prevent distortion of the facepiece. Reuse of respirators equipped with dust filters is permitted, provided work has not been performed in an area with suspected or actual radiological contamination, the cartridges are not saturated with moisture, breathing resistance is not excessive, chemical odors are not detected, and unless otherwise

Site-Specific Health & Safety Plan
Operable Unit No. 5

Manual:
Section:
Page:
Organization:

RF/ER-94-00045
6.0, Rev. 0
6-4
ER OU 5, 6 & 7 Closures

directed by the HSS. The following information should serve as a guide for respirator dust filter cartridge replacement:

- Personnel required to use respirators frequently (i.e., more than a few times per month) should replace dust cartridges at least on a monthly basis.
- Personnel who are moderate/medium respirator users (i.e., few times per month) should replace dust cartridges at least every three months.
- Infrequent or occasional respirator users should replace dust cartridge at least every six months.

ASI employees are authorized to change respirator cartridges with the same type of cartridge.

7.0 DECONTAMINATION

7.1 INTRODUCTION

The objective of decontamination is to remove hazardous substances from workers and equipment, to assure compliance with DOE Order 5480.11 and OSHA Standard 29 CFR 1910.120, and to prevent potential adverse health effects that could be caused by contact with hazardous materials. Decontamination requirements and procedures at OU5 will vary according to the task and the hazardous materials encountered. It is expected that ASI employees will directly handle hazardous waste materials during the initial phases of the remedial activities at this site. The anticipated activities of ASI employees include project management, site inspections, air monitoring for chemical and radiological contaminants, soil and water sample collection and radiological monitoring of personnel and equipment leaving the site. The majority of this work will be conducted outside of the EZ in either the CRZ or the Support Zone, where only minimal or no decontamination will be required. In the event that decontamination of ASI personnel or equipment is required, they will use the decontamination equipment used for performing the investigation work and will follow the approved decontamination procedures.

7.2 DECONTAMINATION PROCEDURES

7.2.1 Personnel and Small Equipment Decontamination

Decontamination Procedures for the various phases of work at OU5 will be determined by the hazardous materials present at each site. The hazardous materials known to be present thus far include organic solvents, metals, and radionuclides. It is the responsibility of the HSS, or designee, to determine whether radiological contamination of personnel or equipment exists and to prescribe the decontamination procedures that will be required. The requirements for chemical decontamination will depend on the type of chemical present. Safe work practices are to be exercised at all times to prevent or minimize personnel

Site-Specific Health & Safety Plan
Operable Unit No. 5

Manual:
Section:
Page:
Organization:

RF/ER-94-00045
7.0, Rev. 0
7-2
ER OU 5, 6 & 7 Closures

and equipment contamination. Appropriate PPE will be used during decontamination operations as an additional measure to prevent direct employee exposure to hazardous substances.

Current EG&G SOPs should be consulted for specific decontamination requirements. These procedures include SOP FO.3 - General Equipment Decontamination; SOP FO.6 - Handling of Personal Protective Equipment; and SOP FO.7 - Handling of Decontamination Water and Wash Water.

7.2.2 Heavy Equipment Decontamination

ASI subcontractors will be providing or operating heavy equipment such as drill rigs at OU5. Any such heavy equipment used at the site must be checked for contamination and decontaminated (if necessary) prior to leaving the area. Large pieces of equipment will be frisked with radiological survey instruments and smeared as needed to meet radiological decontamination standards. Surface contamination surveys and release of equipment shall be performed in accordance with EMRGs 3.1 and 3.2, respectively. Such equipment will be decontaminated in accordance with SOP FO.4 - Heavy Equipment Decontamination.

Site-Specific Health & Safety Plan
Operable Unit No. 5

Manual:
Section:
Page:
Organization:

RF/ER-94-00045
8.0, Rev. 0
8-1
ER OU 5, 6 & 7 Closures

8.0 MEDICAL SURVEILLANCE

8.1 MEDICAL MONITORING REQUIREMENTS

All ASI field personnel are participants in a medical monitoring program which fulfills the requirements of 29 CFR 1910.120. The program includes:

- Baseline Medical Examination
- Annual Medical Examination
- Exit Medical Examination
- Incident Specific Examination

8.2 AVAILABILITY OF MEDICAL SERVICE

At least one ASI employee trained in First Aid and CPR will be present at each work site. The EG&G Occupational Health Department is located in Building 122. The full staff is on duty from 7:30 am to 4:00 p.m. Monday through Friday. The registered nursing staff is on duty from 6:30 a.m. on Monday through 10:00 p.m. on Friday. A physician and a nurse are always on call for any emergency during off hours. Weekend coverage (Friday from 10:00 pm. through Monday at 6:30 am.) is provided by EMTs. They can be contacted at extension 4336 and will meet employees in the Occupational Health Department or respond to the site of any emergency.

8.3 TRANSPORTATION FOR MEDICAL REASONS

ASI employees will be provided transportation for medical reasons (if it is medically safe, as determined by the EG&G Occupational Health Staff) to their home or to an appropriate medical facility for the following:

- An emergency: EG&G Occupational Health will determine the appropriate mode of transportation for illness/injury requiring air or ground ambulance transport.
- A nonemergency: If there is no medical necessity for ambulance transport, supervisors will be asked to arrange transportation.

In a situation where an employee is injured and requires non-ambulance transport to an offsite medical facility, the ASI FOL or designee, will accompany that person as a representative of ASI and be available to interface with outside authorities (if necessary) and to provide further transportation for the employee as appropriate. If ASI personnel are unable to arrange transportation on weekends or during night work they will contact the EG&G Shift Superintendent (RFETS Emergency Coordinator) at extension 2914 for assistance.

8.4 MEDICAL RECORDS

The ASI Health and Safety Department keeps medical information in an individual's file, including laboratory reports, EKG reports, x-ray reports, health histories, physical examinations, letters, and reports from the employee's personal or referral physician.

8.4.1 Release of Medical Records and Medical Information

The medical records will remain in the possession of the ASI Health and Safety Department in Albuquerque, New Mexico and will not be taken from the premises except for the purpose of answering subpoenas. Copies of the medical record will be released to the employee, insurance companies, attorneys, hospitals, and/or physicians when a written authorization has been presented to the ASI Health and Safety Department. A written authorization must:

- Specify that ASI is to release the information;
- Be dated within the last 60 days;
- Specify to whom the information is to be released;

Site-Specific Health & Safety Plan
Operable Unit No. 5

Manual:
Section:
Page:
Organization:

RF/ER-94-00045
8.0, Rev. 0
8-3
ER OU 5, 6 & 7 Closures

- Be completed in ink; and
- Be signed by the employee.

Medical information may not be released to anyone else without written authorization from the employee.

Employees of the Health and Safety Department, authorized by the SSO, are the only employees who will have access to medical records.

Release of records associated with work-related or alleged work-related illness and injury does not require signed consent. A release may be requested to expedite communication with attending physicians.

8.5 SUBCONTRACTOR MEDICAL SURVEILLANCE PROGRAM

ASI-subcontractors are responsible for providing and implementing a medical surveillance program for all of their employees assigned to work at OU5 that meet the requirements of 29 CFR 1910.120(f)(2). The ASI-subcontractor physician must provide written authorization that each employee working at OU5 is fit to work. These records will be kept on file at the ASI project trailer and will be available for review by RFETS personnel. If respiratory protection is required at the site, the physician must provide authorization that the employee is medically qualified to wear a respirator. ASI and ASI-subcontractor personnel required to wear a respirator will be quantitatively fit tested by the EG&G Industrial Hygiene Department.

9.0 MONITORING

9.1 INTRODUCTION

The monitoring procedures for ASI personnel working at OU5 include those for chemical contaminants and for radiological contaminants and have the following objectives:

- To characterize concentrations of dusts, mists, fumes, gases, and vapors present in the OU5 work areas.
- To acquire sufficient quantitative data that will be used to verify the appropriate levels of PPE, site control measures and boundaries, and decontamination procedures.
- To identify conditions that may be immediately dangerous to life or health.

9.2 MONITORING INSTRUMENTS

The following instruments (or equivalent instruments approved by EG&G) will be used for site monitoring:

- An organic vapor meter, OVM Model 580B, equipped with a photoionization or flame ionization detector, and a Draeger hand pump with detector tubes for specific chemicals of concern will be used to monitor for volatile organics.
- A Ludlum 12 with 43-5 alpha probe will be used to monitor dry equipment surfaces and dry PPE for the presence of alpha-emitting radioisotopes.
- A Ludlum 12 with a 44-9 pancake probe will be used to monitor equipment and PPE for the presence of beta- and gamma- emitting radioisotopes.
- A MIE PDM-3 Miniram real-time dust monitor or equivalent will be used to monitor for airborne particulates.
- A constant-flow air sampling pump with appropriate sampling media or passive monitors will be used to collect samples for determination of concentrations of nonradiological contaminants in the workers' breathing zone.

- Ambient air and oral (or equivalent) thermometers will be used to monitor personnel for heat stress.
- Other monitoring instruments such as combustible gas meters will be used as necessary during field operations.

9.3 CHEMICAL AND RADIOLOGICAL MONITORING

The ASI HSS will coordinate monitoring (as described below) and document results of monitoring. Instruments will be performance checked daily. Real-time monitoring will be conducted to provide an indication of the presence of potential hazards during intrusive activities. Other types of monitoring may be required during specific site activities.

9.4 CHEMICAL-RELATED AIR MONITORING

The ASI HSS, or designee, shall be responsible for conducting chemical contamination monitoring for ASI employees.

9.4.1 Real-Time Monitoring

Organic vapor monitoring may be conducted using real-time monitoring equipment and detector tubes. Real-time monitoring equipment will analyze an air sample within a short time frame and provide a readout of the air concentration of the contaminants.

9.4.2 Personnel Monitoring

Personnel and Breathing Zone monitoring may be conducted for personnel performing field work. When personal monitoring is performed, personnel with the maximum potential for exposure to airborne compounds or contaminants will be monitored. Personal monitoring will not generally be performed

unless real time instruments approach 1/2 the occupational exposure limit (or unless a DAC/10 concentration is indicated per Table 9-1).

9.4.3 Sampling Procedures

Air sampling procedures for compounds and contaminants will be in accordance with OSHA or NIOSH procedures, or the best demonstrated available technology where OSHA or NIOSH procedures are not available for a particular contaminant. In some instances sampling may be performed during the entire operation or shift.

Sampled workers will be notified of air sampling results in a timely manner. Typically, results will be recorded in the log book. Sampled workers will be asked to sign to verify their notification of results.

9.5 RADIATION MONITORING

Radiological monitoring involves the detection and measurement of alpha, beta, gamma, or neutron radiation. Radiological monitoring is established in accordance with appropriate and relevant requirements and policies. The goal of the radiation monitoring program is to maintain personnel exposure ALARA. Personnel and equipment contamination surveys will be performed in accordance with SOP FO.16 Field Radiological measurements, and the EG&G SOPs identified below. Air monitoring for potential radiological hazards is not anticipated to be necessary based on available information concerning OU5. If radiological hazards are identified through personnel and equipment surveys conducted during site work, air monitoring may become necessary. The ASI HSS will be responsible for notifying the SSO, who will determine if an air sampling program is necessary. An air sampling program will be developed if potential radiological hazards are identified during site work (see Table 9-1).

9.5.1 Personnel Monitoring

Monitoring of personnel for contamination will be performed in the following situations (included in EMRG 2.1 -- Personnel Contamination Monitoring):

- Whenever leaving a Radiologically Controlled Area;
- Whenever exiting a Contaminated Area;
- During and after work where the potential exists for release of radiological material;
- Whenever passing through a Radiologically Controlled Area;
- Following personnel decontamination;
- When required by EG&G SOP FO.6 -- Handling of Personal Protective Equipment; or
- When required by a radiation work permit.

9.5.2 Surface Contamination Surveys

The purpose of the surface contamination surveys will be to control and document all property/material to be released from Radiologically Controlled Areas per EG&G SOP FO.3, FO.6, and EMRG 3.1 and EMRG 3.2 and specified uncontrolled areas (e.g., any IHSS). All equipment which leaves the Radiologically Controlled Area must be surveyed and comply with the Property Release Evaluation forms as attached in Appendix E.

Site-Specific Health & Safety Plan
Operable Unit No. 5

Manual:
Section:
Page:
Organization:

RF/ER-94-00045
9.0, Rev. 0
9-5
ER OU 5, 6 & 7 Closures

9.6 ACTION LEVELS

All decisions regarding application of action levels for nonradioactive substances will be based on air monitoring guidelines (refer to Table 3-3 for action level). The action level for measurements of radioisotopes will be based on surface measurements of dry soil, equipment, or PPE. The HSS will notify the SSO and FOL, who will in turn notify the EG&G Project Manager, immediately after any upgrade in PPE. Refer to Table 9-1 for Derived Air Concentrations for radiation exposures to workers and Table 9-2 for contamination control limits.

Site-Specific Health & Safety Plan
Operable Unit No. 5

Manual:
Section:
Page:
Organization:

RF/ER-94-00045
10.0, Rev. 0
10-1
ER OU 5, 6 & 7 Closures

10.0 TRAINING

ASI personnel assigned to OU5 must complete the training required by OSHA as well as site-specific health and safety training courses required by EG&G, and first aid training required by ASI. OU5 is an environmental investigation classified as a hazardous waste operation by OSHA standard 29 CFR 1910.120; therefore, the training requirements, including the initial training, annual refresher training, and supervisor training, apply to ASI and ASI-subcontractor personnel working at the site. Additional training courses required by EG&G include General Employee Training (GET), radiation worker, and respirator training.

10.1 TRAINING REQUIREMENTS

10.1.1 Hazardous Waste Site Health and Safety

Any ASI or ASI-subcontractor employee assigned to work at OU5 must complete the hazardous waste health and safety course required by OSHA in 29 CFR 1910.120(e). The length of the required course may be 40 hours or 24 hours, based on the worker's assigned tasks. The 40-hour course and 3 days of supervised field experience is mandatory for workers who may be required to use respiratory protection equipment and/or who are engaged in activities in which they may be exposed to hazardous substances and health hazards at or above the Permissible Exposure Limits (PEL).

All ASI and ASI-subcontractor field employees assigned to the OU5 project are required to complete 40 hours of training. Personnel "who are onsite occasionally for a specific limited task," such as inspectors, managers, or other site visitors, are required to complete a minimum of 24 hours of training and 1 day of supervised field experience.

All hazardous waste workers must complete an annual 8-hour refresher course. The course content consists of a summary of the 40-hour course. Supervisors of hazardous waste sites or of tasks conducted

Site-Specific Health & Safety Plan
Operable Unit No. 5

Manual:
Section:
Page:
Organization:

RF/ER-94-00045
10.0, Rev. 0
10-2
ER OU 5, 6 & 7 Closures

on hazardous waste sites must complete, at a minimum, the same baseline training (24-hour or 40-hour) as the workers they supervise and an additional 8-hour supervisor health and safety training course.

10.1.2 Radiation Worker Training

ASI and ASI-subcontractor personnel performing field work must complete the 3-day class entitled "Radiation Safety for Environmental Restoration" offered by the EG&G Performance Based Training Department.

10.1.3 Site-Specific Briefing

ASI employees assigned to work on OU5 must receive a briefing that introduces site safety, emergency procedures and the information contained in the SSHSP. The briefing should provide enough detail that employees can implement the SSHSP and safely perform their assigned tasks.

10.1.4 Additional Training

In addition to training requirements specified by OSHA and EG&G, ASI requires that all of its field personnel be certified in first aid and cardio-pulmonary resuscitation. Personnel are trained and certified in the standard American Red Cross methods by Red Cross instructors.

10.1.5 Safety Meetings

Discussion at weekly meetings may include the following topics:

- Health and safety considerations and the required PPE for current operations;
- Any revisions to the OU5 SSHSP;
- Any new MSDS filed at the ASI project trailers; and

- Documented or observed unsafe acts committed at the worksite, a clarification of the safety requirements violated, and methods to prevent future violations.

Workers are required to attend the weekly safety meetings and sign a roster (attendance sheet) that will be maintained by the HSS at the ASI project trailers. Meeting minutes will be documented and attached to the roster. The FOL or HSS will review the meeting minutes with absentees and have them sign the attendance sheet. This documentation will be filed at the work site, available to EG&G upon request, and archived when the project is completed.

10.1.6 Rehearsal of Emergency Response Plan

ASI personnel will participate in any Emergency Response Plan rehearsals conducted by EG&G Emergency Preparedness.

10.1.7 Visitors

Visitors who do not have the required OSHA training and medical certifications will not be allowed to enter the site EZ or CRZ. Prior to gaining access to the site, visitors to OU5 will have an orientation that summarizes the SSHSP. This orientation does not qualify the visitor to access-controlled areas of the site. The purpose of the briefing is to provide sufficient information on the hazards and control measures at the site to prevent the visitor from unknowingly violating any site control measures. Visitors will be escorted by a trained site employee during the entire visit.

Visitors will provide signature verification that they have read, understand, and will comply with the requirements of the SSHSP. Signatures are recorded in a logbook, which is maintained at the ASI project trailers by the FOL.

10.2 IMPLEMENTATION OF TRAINING

Training for ASI personnel is provided by the ASI Health and Safety Department and outside sources which include EG&G training courses. Only trained employees will be assigned to perform field work. Training must meet the performance requirements of ASI and OSHA. ASI personnel will be required to complete EG&G CBT modules, including GET and Radiation Safety for Environmental Restoration.

10.3 PERFORMANCE EVALUATIONS

The training requirements described in this section are designed to teach skills applicable to fieldwork at OU5. Workers and supervisors are responsible for learning and applying these basic skills and concepts. ASI will evaluate its workers' abilities by administering tests during training courses and field performance evaluations. The SSO or designee will conduct field audits at least quarterly to evaluate worker health and safety skills. Below-average performance on examinations or field evaluations may disqualify a worker from working at the site until the worker's performance has improved.

10.4 VERIFICATION OF TRAINING

The HSS will maintain documentation of ASI and ASI-subcontractor employee training (including supervised field experience) on file at the ASI project trailers. ASI employees will also provide signature verification that they have read, understood, and will comply with the ASI OU5 SSHSP. These records will be kept on file by the HSS.

11.0 EMERGENCY INFORMATION

11.1 NOTIFICATION

LIFE-THREATENING EMERGENCIES--CALL EXTENSION 2911

NON LIFE-THREATENING EMERGENCIES--CALL EXTENSION 2914

Notification requirements for emergency situations at OU5 depend on the nature of the perceived emergency (e.g., spill injury, illness, fire) and the extent to which the damage and/or injuries have progressed. Upon discovery of a release of materials or other non life-threatening emergency situation, the Shift Superintendent will be notified at extension 2914. If there is no answer at 2914, refer to 2911. If the situation is life-threatening, RFETS emergency response personnel will be notified as detailed below.

Call Extension 2911 to obtain emergency assistance for life-threatening emergencies and to simultaneously access the following:

- Emergency Coordinator (Shift Superintendent)
- Plant Protection Central Alarm Station
- Fire Department Dispatch Center
- Medical Department

As much detail about the emergency as possible will be provided. A decision to dispatch any or all of the following equipment will be based on the provided information:

- Fire Engine
- Ambulance
- HAZMAT Response Vehicle

Provide the following information, upon request, to the Emergency Dispatcher:

Site-Specific Health & Safety Plan
Operable Unit No. 5

Manual:
Section:
Page:
Organization:

RF/ER-94-00045
11.0, Rev. 0
11-2
ER OU 5, 6 & 7 Closures

- Informant's name
- Exact location of the emergency
- Nature of the emergency
- Condition of the patient if applicable (breathing, consciousness, bleeding, etc.)
- Special hazards in the area
- Any other information requested

If no details are given, emergency response personnel will respond automatically.

The Emergency Coordinator (EC) will immediately respond to emergencies. The RFETS Protection Central Alarm Station will activate the Building Emergency Support Team by the Life Support/Plant Warning Public Address System. The EC will activate the Emergency Operation Center and notify departments that have an advisory role in the situation, if applicable. The EC will determine whether additional help from offsite agencies (e.g., police, hospitals) is required.

The EC will also notify the following groups when appropriate:

- Radiological Engineering
- Industrial Hygiene
- Industrial Safety
- Waste Operations
- Waste Programs
- Traffic
- Occurrence Notification Officer
- Radiation Protection Area Manager

11.2 SPECIFIC SITE HAZARDS

The response to and abatement of most emergency situations at OU5 will require the expertise of RFETS emergency response personnel. Situations that will require the assistance of RFETS emergency responders include, but are not limited to the following:

- Accidents resulting in physical injury;
- Accidents resulting in chemical or radiological exposure;
- Incidents where the substance cannot be absorbed, neutralized or otherwise controlled at the time of release;
- Situations where there is a potential for safety or health hazards (i.e. fire, explosion, or chemical/radiological exposure, etc.);
- Accidents resulting in a radiological exposure exceeding the following limits:
 - 2 rem (whole body)
 - 7.5 rem (skin)
 - 15 rem (extremities); and
- Chemical exposures exceeding the TLV or PEL.

11.3 FIRES AND EXPLOSIONS

IN THE EVENT OF A FIRE OR EXPLOSION, IMMEDIATELY CALL EXTENSION 2911

In the event of a fire or explosion, personnel will immediately evacuate the area. Evacuation will be a minimum of 300 ft upwind/crosswind of the emergency. The emergency will be handled by the Fire Department and their designees. Portable fire extinguishers are available for small, controllable incipient fires. Fires, regardless of size, are to be reported to the Fire Department.

Site-Specific Health & Safety Plan
Operable Unit No. 5

Manual:
Section:
Page:
Organization:

RF/ER-94-00045
11.0, Rev. 0
11-4
ER OU 5, 6 & 7 Closures

11.4 SPILLS OF HAZARDOUS AND RADIOACTIVE MIXED WASTE AND HAZARDOUS MATERIAL

REPORT TO THE EMERGENCY COORDINATOR AT EXTENSION 2911 all spills where the substance cannot be absorbed, neutralized, or otherwise controlled at the time of release, or where there is a potential for safety or health hazards (fire, explosion, chemical, or radiological exposure). The Emergency Coordinator will dispatch the HAZMAT Response Vehicle and any other necessary support personnel.

Spills that do not require a HAZMAT response shall be cleaned up by site personnel according to HSP-21.04, Section 5.1. Spills onto porous ground will require removal of contaminated dirt as well as the spilled material and are expected to be classified as hazardous and radioactive mixed waste.

11.5 POST-EMERGENCY RESPONSE EQUIPMENT MAINTENANCE

Equipment used in emergency situations will be decontaminated by wiping with a soap solution. Rags used for decontamination will be disposed as low-level radioactive waste, if necessary. Contaminated heavy equipment used in emergencies will be thoroughly decontaminated prior to being released from the site. The decontamination protocols described in SOPs FO.10 - Heavy Equipment Decontamination, FO.11 - Handling of Decontamination Water and Wash Water, and FO.18 - Decontamination Facility Operations will be followed. Equipment will not be released until monitoring indicates that contaminant levels meet requirements of Section 9.0 and that chemical contamination is not present.

11.6 EMERGENCY EQUIPMENT LOCATION

A 15-minute emergency eye wash and shower will be provided for tasks where eye hazards may exist. These items may be located in the ASI project trailers on the site. Fire extinguishers will be located in all field vehicles and will be temporarily located at sites where there is a potential for fires (e.g., during welding operations). First aid will be provided by EG&G Medical.

11.7 EVACUATION PLAN

Personnel and visitors to OU5 will evacuate the area if any of the following occur:

- If an emergency (such as a fire or chemical spill) develops
- If instructed by site supervision
- If instructed by the Shift Superintendent over the site radio or telephone system.

After an evacuation, each Field Team Leader will verify that the employees that he/she supervises are accounted for.

11.8 COMMUNICATION

Telephones are available in the ASI project trailer(s) (966-6545). In addition, radios will be used by field personnel to maintain contact with the FOL or other designated persons in the trailers who have access to telephones. The HSS and FOL will monitor the radio frequency in use by field personnel at all times during field operations. Radio frequencies are monitored by the RFETS security system to ensure that response time is minimal in the event of an accident or emergency on the site. In the event of a plant emergency, Central Dispatch will notify the trailers and field personnel by telephone and radio. If Central Dispatch fails in its attempt to contact anyone onsite, a security car will be sent to the site to alert personnel of the emergency.

Site-Specific Health & Safety Plan
Operable Unit No. 5

Manual:
Section:
Page:
Organization:

RF/ER-94-00045
12.0, Rev. 0
12-1
ER OU 5, 6 & 7 Closures

12.0 MATERIAL HANDLING

12.1 INTRODUCTION

ASI employees are expected to be involved in operations that will fill drums with potentially contaminated soil or water. The drums are expected to be labeled and left in place until analytical results are received and EG&G employees remove the drums. ASI personnel are not expected to handle the drums once they are filled. Drums will be labeled in accordance with EMD Operating Procedure FO.10, Receiving, Labeling, and Handling of Waste Containers.

12.2 MATERIALS HANDLING PROGRAM

This section is not applicable to ASI personnel.

Site-Specific Health & Safety Plan
Operable Unit No. 5

Manual:
Section:
Page:
Organization:

RF/ER-94-00045
13.0, Rev. 0
13-1
ER OU 5, 6 & 7 Closures

13.0 REFERENCES

EG&G, 1992a, Final Phase I RFI/RI Work Plan, Woman Creek Priority Drainage (Operable Unit No. 5), Revision 1, February.

EG&G, 1992b, Final Site-Specific Health and Safety Plan for the Phase I RCRA Facility Investigation/Remedial Investigation Operable Unit 5.

EG&G, 1994, Technical Memorandum No. 15, Amended Field Sampling Plan, Woman Creek Priority Drainage (Operable Unit No. 5), August.

Table 3-1 (Sheet 1 of 8)

Operable Unit 5 Summary Table

IISS Number	Site Activities	Known or Suspected Chemical, Radiological, or Other Hazards Present	Monitoring Requirements	Initial Level of Protection	Other Controls
All IISS (Common Hazards)	All. These hazards are presumed present at all hazardous substance sites even when investigational activities are not present. Site activities may increase the magnitude or number of hazards.	Heat Stress (above 72.5°F, adj. temp.) Cold Stress See Section 3.3.1	Core Temperature Pulse	None	Adjust work/rest cycles and fluid intake to maintain normal body temperature.
		Fugitive Dust which may be contaminated with heavy metals, radionuclides or chemical contaminants. The amount of dust depends upon several factors including wind speed, ground cover, and site activities.	Real Time Particle Counter Wind Direction	0-5.05 mgTSP/m ³ No respirator required. See Table 3-3 5.0-10 mgTSP/m ³ Chemical Cartridge Respirator, HEP/NOV cartridges.	Work upwind of dusty areas whenever possible. Suppress dust to less than 2.5 mg/m ³ with water whenever the water will not interfere with analysis.
		Ticks	Visual inspection	None	Wear coveralls with wrists and ankles taped to gloves/boots. Use tick repellent containing over 30% DEET on exposed skin areas and hair.
		Prairie Rattlesnake	Visual inspection	None	Make noise and probe areas with long stick before stepping.
		Black Widow Spider	Visual inspection	None	Wear gloves
		Scorpions	Visual inspection	None	Wear gloves

Table 3-1 (Sheet 2 of 8)

Operable Unit 5 Summary Table

IISS Number	Site Activities	Known or Suspected Chemical, Radiological, or Other Hazards Present	Monitoring Requirements	Initial Level of Protection	Other Controls
IISS 115	Non-intrusive activities such as radiological and geophysical surveys	Site general hazards listed above: U-238 to 19 pCi/g	TSP monitoring	No respirator required: 0-5.0 mgTSP/m ³ See Table 3-3	Level D PPE
			Contamination control survey	Chemical Cartridge Respirator, HEPA/OV cartridges Skin protection to prevent direct contact: 5.0-10 mgTSP/m ³	
	Intrusive Activities such as borings and monitoring well installation	Drums, buried. Drums and other containerized wastes will be presumed to be present until geophysical tests indicate the absence of metal masses.	Metal survey. Metal detector may be used to depths of 3-4 feet. Geophysical surveys may be used for greater depths.	None	Avoid metal mass. Offset borings/wells by at least 10 feet.
			Underground Utilities	Check with plant/public utility "spotters" to have locations marked. Perform geophysical surveys.	Minimum off-set 10 feet from utility. Larger off-set may be necessary if high voltage lines are present.

Table 3-1 (Sheet 3 of 8)

Operable Unit 5 Summary Table

IISS Number	Site Activities	Known or Suspected Chemical, Radiological, or Other Hazards Present	Monitoring Requirements	Initial Level of Protection	Other Controls
IISS 115	Intrusive activities such as borings and monitoring well installation	Overhead Hazards Volatile Chemicals Chlorinated Solvents Benzene Paint & Paint Thinners	Visual inspection Passive Dosimeter OVM Model 580B and Draeger tubes.	None Respiratory protection required at or above 1/2 occupational exposure limit. Chemical cartridge respirator, full face, combination HEP/NOV cartridges. If carbon tetrachloride or methylene chloride are present above the TLV as determined by Draeger tubes or equivalent, use of supplied air respirator or SCBA is required.	De-energize high voltage lines in accordance with lock-out/tag-out procedure or maintain safe distances as specified in Section 3.3.4. Remove or secure overhead objects which have potential to affect work area. None

Table 3-1 (Sheet 4 of 8)

Operable Unit 5 Summary Table

IISS Number	Site Activities	Known or Suspected Chemical, Radiological, or Other Hazards Present	Monitoring Requirements	Initial Level of Protection	Other Controls
IISS 115	Intrusive activities such as borings and monitoring well installation	Site general hazards and potential for elevated concentrations of uranium and/or chemicals. Approx. 20 kg spent uranium believed in this site. Considerable quantities of graphite may also be present.	Alpha Monitoring: Ludlum Model 12 with 43-5 probe.	No respiratory requirement unless the action levels below are exceeded.	Dust suppression may be used where permissible.
			Beta/gamma Monitoring: Ludlum Model 12 with 44-9 probe	1/2 Occupational Exposure Limit or 1/10DAC (see Table 9-1)	
			Chemical vapor monitoring using OVM 580B and Draeger tubes	Chemical cartridge respirator, full face, combination HEPA/OV cartridges. If carbon tetrachloride or methylene chloride are present above the TLV as determined by Draeger tubes or equivalent, use of supplied air respirator or SCBA is required.	
		Fugitive dust	Dust Monitor	Respiratory Protection above 5 mg/m ³	Dust suppression using water spray.
		Beryllium	Personal Air Sampling	Cartridge respirator, full face, HEPA filter cartridges. Respiratory Protection above 2ug/m ³	Dust suppression using water spray.
				Chemical cartridge respirator, full face, combination HEPA/OV cartridges.	

Table 3-1 (Sheet 5 of 8)

Operable Unit 5 Summary Table

IISS Number	Site Activities	Known or Suspected Chemical, Radiological, or Other Hazards Present	Monitoring Requirements	Initial Level of Protection	Other Controls
IISS 115	Sampling effluent pipes from IISS 115	Dissolved uranium, beryllium, and chemicals	No monitoring requirement	No respiratory protection requirement. Face shield, splash apron or saranex coveralls, waterproof gloves and boots.	None
IISS 133.1 through IISS 133.6 Ash Pits and, Incinerator, and Wash Pad	Non-intrusive activities such as radiological and geophysical surveys	Site General Hazards plus residues from burning general refuse and uranium contaminated wastes.	TSP: PDM-3 Alpha: >300 cpm Beta/Gamma: >1000 cpm or 100 cpm above background.	Respiratory protection required: 1. If TSP is above 5.0 mg/m ³ or 2. If radiation has potential to exceed 1/10 DAC (see Table 9-1). 3. If site work is performed prior to radiological survey. Chemical cartridge respirator, full face, combination HEPA/OV cartridges.	Dust suppression using water where permissible.

Table 3-1 (Sheet 6 of 8)

Operable Unit 5 Summary Table

IIHS Number	Site Activities	Known or Suspected Chemical, Radiological, or Other Hazards Present	Monitoring Requirements	Initial Level of Protection	Other Controls
IIHS 133.1 through IIHS 133.6 Ash Pits and, Incinerator, and Wash Pad	Soil Penetrating Activities such as soil borings, installation of monitoring wells.	Resuspension of contaminated dust.	TSP: PDM-3 Alpha: >300 cpm Beta/Gamma: >1000 cpm	Respiratory protection required: 1. If TSP is above 5.0 mg/m ³ or 2. If radiation has potential to exceed 1/10 DAC (see Table 9-1). 3. If site work is performed prior to radiological survey.	Dust suppression using water where permissible. Tarps or other coverings may be used to reduce wind contact with excavated materials.
		Heavy metals			
		Uranium			
		Overhead Hazards: High voltage wires Trees Buildings	Visual Inspection	None	Deenergize high voltage lines in accordance with lock-out/tag-out procedures or maintain safe distances as specified in Section 3.3.4. Remove or secure overhead objects which have potential to affect work area.
		Underground Utilities			
			Check with plant/public utility "spotters" to have locations marked.	None	Minimum off-set 10 feet from utility. Larger off-set may be necessary if high voltage lines are present.

Table 3-1 (Sheet 7 of 8)

Operable Unit 5 Summary Table

HHS Number	Site Activities	Known or Suspected Chemical, Radiological, or Other Hazards Present	Monitoring Requirements	Initial Level of Protection	Other Controls
HHS 133.1 through HHS 133.6 Ash Pits and, Incinerator, and Wash Pad	Soil penetrating activities such as soil borings and installation of monitoring wells	Uranium Wastes	Radiation Monitoring Ludlum Model-12 with 44-9 alpha/beta/gamma Probe Ludlum Model-12 with 43-5 Alpha Probe	None	Water suppression of dust at times when alpha monitoring is not required and water will not interfere with analysis.
HHS 209 and other surface disturbances	Non-intrusive operation	Unknown	Alpha: 0-1250 cpm No Respirator 1250-2500 cpm respirator* Beta/Gamma: 0-5000 cpm no respirator 5000-50000 cpm respirator* OVM: 0-1 ppm No respirator 1-10 ppm respirator* *Cartridge respirator HEPA/OV (see note at right)	EPA Level-D with 5-minute escape hood. Respirator use depends on meter readings. If carbon tetrachloride or methylene chloride are present above the TLV as determined by Draeger tubes or equivalent, use of supplied air respirator or SCBA is required.	Water suppression of dust at times when alpha monitoring is not required and water will not interfere with analysis.
	Intrusive operations	Unknowns and containerized wastes	Monitor for unknowns as in above non-intrusive operations. Metal detection	EPA Level-D with 5-minute escape hood. Respirator use depends on meter readings. If carbon tetrachloride or methylene chloride are present above the TLV as determined by Draeger tubes or equivalent, use of supplied air respirator or SCBA is required.	Water suppression of dust at times when alpha monitoring is not required and water will not interfere with analysis.

Table 3-1 (Sheet 8 of 8)

Operable Unit 5 Summary Table

IHSS Number	Site Activities	Known or Suspected Chemical, Radiological, or Other Hazards Present	Monitoring Requirements	Initial Level of Protection	Other Controls
IHSS 142.10 IHSS 142.11 Ponds C1 & C2	Intrusive activities such as monitoring well installation	Chemical hazards include possible exposure to low levels of organics and metals which were detected in surface water and sediments. Radioisotopes in sediment and surface water samples were found to be at or near background levels.	Passive Dosimeter OVM Model 580B Alpha Monitoring: Ludlum Model 12 with 43-5 probe. Beta/gamma Monitoring: Ludlum Model 12 with 44-9 probe	Respiratory protection required: 1. If TSP is above 5.0 mg/m ³ or 2. If radiation has potential to exceed 1/10 DAC (see Table 9-1). 3. If site work is performed prior to radiological survey. Chemical cartridge respirator, full face, combination HEPA/OV cartridges. If carbon tetrachloride or methylene chloride are present above the TLV as determined by Draeger tubes or equivalent, use of supplied air respirator or SCBA is required.	Dust suppression using water where permissible. Tarps or other coverings may be used to reduce wind contact with excavated materials.

Table 3-2
Threshold Limit Values for Noise¹

Duration per Work Day (Hours)	Sound Level dBA ²
16	80
8	85
4	90
2	95
1	100
1/2	105
1/4	110
1/8	115 ³

¹ From "Threshold Limit Values and Biological Exposure Indices for 1990-1991," American Conference of Governmental Industrial Hygienists, Cincinnati, Ohio.

² Sound levels in decibels (dBA) are measured on a sound meter, conforming as a minimum to the requirements of the American National Standards Specification for Sound Level Meters, S1.4 (1971 Type S2A, and set to use the A-weighted network with slow meter response).

³ No exposure to continuous or intermittent noise in excess of 115 dBA.

Table 3-3
ACTION LIMITS

Instrument	Monitoring Frequency	Action Limit	Action
OVM Model 580B 10.2 eV lamp	Initial Hourly During Auger Changes 1-10 PPM	0-1 PPM Chemical cartridge respirator with O V / H E P A cartridges CGI	No respiratory requirement Auger Change
0-100% LEL (in hole) Test outside auger. If explosive mixture is present more than 4 inches from auger, ventilate or add dry ice to inert.	Normal for landfills.		>100% LEL
Rudlum Model 12 -5 Alpha Probe	Auger Cuttings Split Spoon Sampler Soil Surface	*	*
44-9 Pancake Probe		*	*
Continuous	0-5 mg/m ³ >5 Also see Table 9-1.	No respirator required. Respirator with O V / H E P A cartridges	PDM-3 Dust Monitor
Hi-Flow Personal Sampling Pump with MCEF Filter Cassette	During periods of dust generation when drilling and handling samples	>0.1 f/cc TWA; >0.5 f/cc 30-minute excursion	Level C PPE, with respirator and HEPA cartridges until air monitoring establishes levels below action limits

* Actions are IHSS specific; Refer to Table 3.1 for actions and action limits.

Table 6-1
Occupational Safety and Health Administration
Standards for Use of
Personal Protective Equipment

Type of Protection	Regulation	Source
General	29 CFR Part 1910.132 General Requirements for Personal Protective Equipment	41 CFR Part 50-204.7
	29 CFR Part 1910.1000 29 CFR Part 1910.1001-1045	OSHA Rulemaking OSHA Rulemaking
Eye & Face	29 CFR Part 1910.133 (a)	ANSI Z87.1-1968* Eye & Face Protection
Noise Exposure	29 CFR Part 1910.95	41 CFR Part 50-204.10 & OSHA Rulemaking
Respiratory	29 CFR Part 1910.134	ANSI Z88.2-1969* Standard Practice for Respiratory Protection
d	29 CFR Part 1910.135	ANSI Z89.1-1969* Safety Requirements for Industrial Head Protection
Foot	29 CFR Part 1910.136	ANSI Z41.1-1967* Men's Safety Toe Footwear

* American National Standards Institute (ANSI), 1430 Broadway, New York, NY 10018. ANSI regularly updates its standards. The ANSI standards in this table are those that OSHA adopted in 1971. Since the ANSI standards which were then adopted had been set in 1967-1969, those standards, now required under OSHA, may be less stringent than the most recent standards.

Table 6-2
General Personal Protective Equipment Inspection Checklists¹

CLOTHING

Before use:

- Determine that the clothing material is correct for the specified task at hand.
- Visually inspect for:
 - imperfect seams
 - non-uniform coatings
 - tears
 - malfunctioning closures
- Hold up to light and check for pinholes.
- Flex product:
 - observe for cracks
 - observe for other signs of shelf deterioration
- If the product has been used previously, inspect inside and out for signs of chemical degradation:
 - discoloration
 - swelling
 - stiffness

During the work task, periodically inspect for:

- Evidence of chemical attack such as discoloration, swelling, stiffening, and softening. Keep in mind, however, that chemical permeation can occur without any visible effects.
 - closure failure
 - tears
 - punctures
 - seam discontinuities

¹Specific procedures recommended by equipment manufacturers should be followed.

Table 6-2 (continued)
General Personal Protective Equipment Inspection Checklists¹

RESPIRATORS

Self Contained Breathing Apparatus (SCBA)

- Inspect air supply/cascade system:
 - before and after each use
 - at least monthly when in storage
 - every time they are cleaned
- Check all connections for tightness.
- Check material conditions for:
 - pliability
 - signs of deterioration
 - signs of distortion
- Check for proper setting and operation of regulators and valves (according to manufacturers' recommendations).
- Check operation of alarm(s).

Check face mask and lenses for:

- cracks
- crazing
- fogginess

Supplied-Air Respirators

- Inspect Supplied Air Respirators:
 - daily when in use
 - at least monthly when in storage

¹Specific procedures recommended by equipment manufacturers should be followed.

Table 6-2 (continued)
General Personal Protective Equipment Inspection Checklists¹

RESPIRATORS (cont.)

- every time they are cleaned
- Inspect air lines prior to each use for cracks, kinks, cuts, frays, and weak areas.
- Check for proper setting and operation of regulators and valves (according to manufacturers' recommendations).
- Check all connections for tightness.
- Check material conditions for:
 - signs of pliability
 - signs of deterioration
 - signs of distortion
- Check face mask and lenses for:
 - cracks
 - crazing
 - fogginess

Air-Purifying Respirators

Inspect air-purifying respirators:

- before each use
- after each use
(before using a newly supplied respirator ensure that the storage bag is sealed)
- Check mask for:
 - pliability
 - signs of deterioration
 - distortion

¹Specific procedures recommended by equipment manufacturers should be followed.

Table 6-2 (continued)
General Personal Protective Equipment Inspection Checklists¹

RESPIRATORS (cont.)

- missing or broken parts
 - Examine cartridges or canisters to ensure that they are the proper type for the intended use.
 - Check face shields and lenses for:
 - cracks
 - crazing
 - fogginess
 - Perform positive and negative pressure fit tests prior to use.
-

¹Specific procedures recommended by equipment manufacturers should be followed.

TABLE 6.3

Specific Requirements for Each Level of Protection

Level of Protection	Equipment	Protection Provided	Should be Used When	Limiting Criteria
D	<p>Required:</p> <ul style="list-style-type: none"> • Steel-toed Boots or Shoes • Coveralls • Safety Glasses or Chemical Splash Goggles <p>Optional, as Required</p> <ul style="list-style-type: none"> • Work Gloves • Hearing Protection 	<p>No respiratory protection.</p> <p>Minimal skin protection.</p>	<ul style="list-style-type: none"> • The atmosphere contains no known hazard. • Work functions preclude splashes, immersion, or the potential for unexpected inhalation of or contact with hazardous levels of any chemicals. 	<ul style="list-style-type: none"> • May be worn in support or the CRZ. This level may be worn in the EZ if the area has been demonstrated to be free of air contaminants above action levels and other Level D conditions are met. The atmosphere must contain at least 19.5% oxygen.
Modified D	<p>Required:</p> <p>All Requirements of Level D Plus:</p> <ul style="list-style-type: none"> • Chemically Protective Suit-Tyvek or Polyethylene Coated Tyvek • Inner and Outer Gloves • Chemical-Resistant Safety Boots/Shoes or Steel-toed Work Boots with Latex Overshoes (taped to suit) <p>Options, as Required:</p> <ul style="list-style-type: none"> • Splash Shield • Hearing Protection • Eye Protection 	<p>Increased skin and splash protection, but no respiratory protection.</p>	<p>Working in dusty areas or in areas with splash potential where low inhalation hazard is presented.</p>	<ul style="list-style-type: none"> • May be worn in the EZ if the area has been demonstrated to be free of air contaminants above the action levels. The atmosphere must contain at least 19.5% oxygen.
C	<p>Required:</p> <ul style="list-style-type: none"> • Full-facepiece, air-purifying respirator equipped with organic vapor and HEPA filter cartridges. • Chemically protective clothing dependent on the specific area: <ul style="list-style-type: none"> - Tyvek full body suit for dry areas, - Polyethylene coated Tyvek for when splash hazards exist. • Inner latex glove and outer nitrile gloves (taped to suit). • Hard hat. • Two-way radio communications. <p>Optional, as Required:</p> <ul style="list-style-type: none"> • Coveralls under chemically protective suit. • Face shield for splash protection. • Long cotton underwear. 	<p>Respiratory protection up to 50 times the permissible exposure level of selected contaminants (i.e., particulates and some organic compounds), and skin and splash protection from contaminated dust and water.</p>	<ul style="list-style-type: none"> • The atmospheric contaminants, liquid splashes, or other direct contact will not adversely affect any exposed skin. • The types of air contaminants have been identified, concentrations measured, and a canister is available that can remove the contaminant. • All criteria for the use of air-purifying respirators are met. 	<ul style="list-style-type: none"> • Atmospheric concentration of chemicals must not exceed immediately dangerous to life or health levels. • The atmosphere must contain at least 19.5% oxygen.

Table 9-1
Local Air Monitoring Trigger Levels for Selected Radionuclides in Soils

Soil Activity pCi/gram	Americium-241 or Plutonium-239 DAC/10 TSP mg/m ³	Uranium-233/234 or Uranium-238 DAC/10 TSP mg/m ³	Strontium-90 DAC/10 TSP mg/m ³
0.001	200,000	30,000,000	200,000,000
0.01	20,000	3,000,000	20,000,000
0.1	2,000	300,000	2,000,000
1	200	30,000	200,000
5	40	6,000	40,000
10	20	3,000	20,000
20	10	1,500	10,000
40	5	750	5,000
60	3	500	3,333
80	3	375	2,500
100	2	300	2,000
200	1	150	1,000
400	0.5	75	500
600	0.3	50	333
800	0.3	40	250
1,000	0.2	30	200
1,500	0.13	20	133
2,000	0.10	15	100
5,000	0.04	6	40
10,000	0.02	3	20
20,000	0.01	1.5	10
50,000	0.004	0.6	4
80,000	0.003	0.4	2.5
100,000	0.002	0.3	2

Trigger levels are for Total Suspended Particulate matter (TSP) concentrations measured in the breathing zone as 8-hour, time-weighted averages. They are based on the Derived Air Concentration (DAC)/10 which DOE recognizes as the criteria for implementing respiratory protection.

Table 9-1 (continued)

Local Air Monitoring Trigger Levels
for Selected Radionuclides in Soils

Use of the Table

- 1) Identify the approximate soil activity in the area where intrusive activities are to be conducted.
- 2) Identify the corresponding DAC/10 trigger levels. Those values represent TSP concentrations that trigger donning respiratory protection equipment.
- 3) Measure TSP breathing zone concentrations during intrusive activities using a Mini-RAM or comparable real-time instrument.
- 4) If measured TSP concentrations attain the trigger levels identified above, for a sustained period of time (15-30 minutes), such that the 8-hour time-weighted average could be approached, follow appropriate requirements identified above under item 2 and notify the SSO and Radiological Engineering.
- 5) ALARA practice dictates that reasonable measures be taken to keep exposures to radionuclides as low as reasonably achievable. This implies that routine dust avoidance mechanisms such as avoiding the dust plume path should be implemented, to the extent practicable, regardless of the TSP measurements.
- 6) Environmental concentration measurements and estimates embody uncertainties and can vary at a given location. Thus, users of this table are encouraged to exercise conservative judgement regarding the selection of trigger levels. If several radionuclides are believed to be present at a site, the most conservative trigger level shall be used.

Table 9-2
Contamination Control Limits

TABLE I: ALPHA LIMITS			
Area	Removable		Total Fixed Plus Removable (dpm/100 cm ²)
	Smears (dpm/100 cm ²)	Swipes (dpm)	
Uncontrolled	20	N/A	300 ^{2/}
Controlled	20	N/A	300 ^{2/}
Radiological	200	500 ^{1/}	3,000 ^{2/}

TABLE II: BETA/GAMMA LIMITS		
Area	Removable Smear (dpm/100 cm ²)	Total Fixed Plus Removable (dpm/100 cm ²)
Uncontrolled	200	5,000 ^{3/}
Controlled	200	5,000 ^{3/}
Radiological	1,000	5,000 ^{3/}

- 1/ Minimum detectable activity using the Ludlum Model 12-1A with air proportional detector. Total efficiency (instrument and detector) is 50 percent or as indicated on the calibration sticker. 250 cpm equals 500 dpm. No activity per area is specified since swipes are not used to quantify activity levels.
- 2/ 300 dpm/100 cm² is the DOE Limit for Uncontrolled and Controlled Areas. 3,000 dpm/100 cm² is the DOE Limit for Radiological Areas. The minimum detectable activity using the Ludlum Model 12-1A with air proportional detector of approximately 50 cm² is 1,000 dpm/100 cm² which corresponds to a 250 cpm instrument meter reading of 500 dpm.
- 3/ 5,000 dpm/100 cm² is the DOE Limit for Uncontrolled and Controlled Areas and is the Rocky Flats Limit for Radiological Areas. The minimum detectable activity (MDA) using the Ludlum Model 31 rate meter with the 44-9 pancake GM detector is 5,000 dpm/100 cm². This corresponds to a meter reading of 200 cpm. The maximum allowed background for this MDA is 100 cpm with the instrument range switch on the X1 setting.

Source: EMRG 3.1 -- Performance of Surface Contamination Surveys

APPENDIX A

IHSS LOCATION MAPS FROM
OPERABLE UNIT 5 TECHNICAL MEMORANDUM NO. 15

APPENDIX B
HEAT STRESS

HEAT STRESS

HEAT STRESS

In its early stages, heat stress can cause rashes, cramps, discomfort and drowsiness, resulting in impaired functional ability that threatens the safety of both the individual and coworkers. Table A-1 below, describes symptoms and treatment of heat stress. Table A-2 provides methods, frequencies, and actions pertaining to heat stress monitoring.

EFFECTS OF PERSONAL PROTECTIVE EQUIPMENT

Heat stress may occur with or without use of personal protective equipment (PPE). PPE normally adds layers of clothing which insulate the wearer from cooling air. Chemical protective clothing generally has a vapor barrier to keep out chemical vapors. The vapor barrier also prevents evaporative cooling of perspiration. In short, PPE increases the heat stress on workers.

Heat stress monitoring must be performed at least once per hour for documentation, even when it is unlikely to affect the worker. This monitoring should be initiated when the temperature in the work area is above 72.5°F adjusted temperature (adjusted temperature = air temperature + $[13 \times \% \text{ sunshine}]$). Heat stress monitoring is particularly important for workers wearing semipermeable or impermeable PPE. As the adjusted temperature increases, or the worker starts to show signs of heat stress, the monitoring frequency should be increased accordingly per Table A-3. Figure A-1 is a form that should be used to document heat stress monitoring.

TABLE B-1

Heat Stress Symptoms and Treatment

Condition	Common Symptoms	Treatment
Slightly Elevated Body Temperature	Temp: 100 - 101 °F Headache	Drink cool fluids Rest in cool place until temperature and pulse are below 100 and 110 respectively.
Heat Rash	Rash mainly on back	Shower at the end of the shift.
Heat Cramps	Muscle Cramps or twitching often starting in abdominal area. Pain in hands, feet and abdominal areas.	Remove from field work. Take off PPE. Encourage consumption of cool fluids designed to replenish electrolytes (e.g. Gatorade). No field work for 24-48 hours.
Heat Exhaustion *	Temp 99-102 °F Elevated Pulse Profuse Sweating Pale Skin Cool Wet/Clammy Skin Lethargic Nausea Dizziness	Remove from field work. Take off PPE Drink cool fluids. Rest in cool place No field work for at least 48 hours.
Heat Stroke *	Temp >102 Hot, Dry Skin Flushed Skin Light or no sweating Rapid Pulse	LIFE THREATENING Remove PPE Remove from field work. Flush with cool, not cold water. Transport to medical center. A written release from a doctor is required to return to work.

* If in doubt about whether the condition is heat exhaustion or heat stroke, seek medical attention. Health care specialists have additional training to interpret pupillary response to light, blood pressure and other factors. For Rocky Flats, contact the medical center through x2911.

TABLE B-2

Heat Stress Monitoring

Methods	Temperature	Action
Oral Thermometer, or equivalent body temperature monitor	98.6 - 99.6	Continue Work, and continue monitoring per attached table. Drink cool fluids.
	99.7 - 100	Reduce work load, or reduce work cycle by on-third to maintain body control of temperature. Increase intake of cool fluids. Look for visible signs of heat stress.
	>100	Stop field work. Remove PPE. Rest in cool area and drink cool fluids. Monitor temperature and pulse. Field work is not permitted to resume until oral temperature is below 100.
	100 - 102	Treat for Heat Exhaustion. Remove PPE, rest in cool location, drink cool fluids. Do not permit worker to resume work for 24 hours.
	>102	LIFE THREATENING! Treat for Heat Stroke. Remove PPE, Cool worker using cool water, monitor body temperature, transport to medical facility. Worker needs written permission from attending physician to resume field work.
Heart Rate	Pulse	Action
	50 - 80	Normal heart rate. Heart rate increases as ambient temperature increases and the heart works harder to cool the body.
	100 - 109	Reduce work load and increase fluid intake to keep heart rate low.
	>110	Measured after 5 minutes of rest. No field work permitted. Rest in cool location. Drink cool fluids.
Weight Loss	>1.5% loss of total body weight after an 8 hour work shift in heat stress conditions.	Encourage fluid intake. Increase fluid intake during the work shift to overcome the dehydrated condition.

TABLE B-3 Suggested Frequency of Physiological Monitoring for Fit and Acclimatized Workers^a

Adjusted Temperature ^b	Normal Work Ensemble ^c	Impermeable Ensemble
90°F (32.2°C) or above	After each 45 minutes of work	After each 15 minutes of work
87.5°-90°F (30.8°-32.2°C)	After each 60 minutes of work	After each 30 minutes of work
82.5°-87.5°F (28.1°-30.8°C)	After each 90 minutes of work	After each 60 minutes of work
77.5°-82.5°F (25.3°-28.1°C)	After each 120 minutes of work	After each 90 minutes of work
72.5°-77.5°F (22.5°-25.3°C)	After each 150 minutes of work	After each 120 minutes of work

Source: Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities. NIOSH/OSHA/USCG/EPA.DHHS (NIOSH) Publication No. 85-115. October 1985. p. 8-22.

^aFor work levels of 250 kilocalories/hour.

^bCalculate the adjusted air temperature (ta adj) by using this equation: $ta\ adj\ ^\circ F = ta^\circ F + (13 \times \% \text{ sunshine})$. Measure air temperature (ta) with a standard mercury-in-glass thermometer, with the bulb shielded from radiant heat. Estimate percent sunshine by judging what percent time the sun is not covered by clouds that are thick enough to produce a shadow. (100 percent sunshine = no cloud cover and a sharp, distinct shadow; 0 percent sunshine = no shadows.)

^cA normal work ensemble consists of cotton coveralls or other cotton clothing with long sleeves and pants.

HEAT STRESS MONITORING FORM					
Site: _____			Date: _____		
Name	Time	Weight (lbs)	Oral Temp., or equivalent	Blood Pulse	PPE A,B C,D

HSS Name: _____

HSS Signature: _____

Date: _____

Date: _____

Name	Time	Weight (lbs)	Oral Temp., or equivalent	Blood Pulse	PPE A,B C,D

HSS Signature: _____ Date: _____

APPENDIX C

FIELD ACTIVITIES FROM
OPERABLE UNIT 5 PHASE I RFI/RI WORK PLAN AND
TECHNICAL MEMORANDUM NO. 15

TABLE C-1
PHASE I INVESTIGATION IHSS 115 - ORIGINAL LANDFILL

Activity	Purpose	Location	Sample Number
Review Aerial Photographs	Identify extent and area east of Landfill	Entire site and eastward	NA
Review Radiation Survey	Identify areas of anomalous radiation readings		NA
Magnetometer Survey	Locate metallic objects	Entire site and eastward - 20 ft. grid	2,490
Soil Gas Survey	Locate plumes of volatile organics	Entire site and eastward - 100 ft. grid	69
	Resample areas of possible concern	Areas where low vacuum readings occurred and not covered by other analyses	unknown
Soil Cores	Verify presence or non-presence of volatiles identified during solid gas survey	Random basis, 1 sample every 15 to 20 soil gas samples, at the depth of the soil gas probe	4
Soil Borings	Characterize subsurface conditions and contamination	One in each area of the former ponds, six in the disturbance east of the Landfill, and three along Woman Creek. Borings will be drilled at least 5 feet into weathered bedrock.	11
	Drill three boreholes into bedrock.	Depth will be approximately 150 feet or 15 feet past a water bearing unit encountered above 150 feet, which ever is shallower. Locations are east, west and south of the Original Landfill.	3
	Geotechnical evaluation and bedrock characterization	Entire site and areas adjacent	19
Soil Borings (if plumes are identified)	Transect plumes identified by soil gas survey, if identified	Three borings transecting three highest soil gas locations. Borings will be placed at point of highest reading and two locations downslope of the point. Borings will be drilled at least 6 ft. into weathered bedrock.	Maximum of 9
Complete wells in borings (if plumes are identified)	Monitor alluvial groundwater in plume, if identified	In borings at the points of highest readings	Maximum of 3

TABLE C-1 (continued)
PHASE I INVESTIGATION IHSS 115 - ORIGINAL LANDFILL

Activity	Purpose	Location	Sample Number
Install wells	Monitor alluvial groundwater downgradient of the unit	See Figure 7-1	4
Install piezometers	Provide water levels data for hydrogeologic modelling	Entire site and areas adjacent	9
Conduct aquifer test	Evaluate hydrologic parameters	Well 59593	1
Review plant plans, conduct sewer snake survey	Confirm interconnections of two pipes daylighting in the Landfill	Two pipes in Landfill	NA
Sample effluent (if present)	Characterize effluent from the pipes	Pipe outfalls	2
Sample sediment and surface water	Characterize sediment and surface water downgradient of the unit	Two and three locations along SID and Woman Creek for sediment and surface water, respectively	4 sediment and 6 surface water
Cone Penetrometer Testing	Characterize subsurface conditions	2,200 ft. line approximately 100 ft. south of SID	NA
Well Points	Characterize water table and groundwater chemistry	Up to 15 locations with bedrock lows, and 5 downgradient of Landfill and eastern end of Landfill near borehole 50792	Maximum 20
Conduct field investigation	Evaluate wind re-suspension potential for air monitoring	Entire site and areas in OU3	NA

NA - Not Applicable
Items in bold type indicate activities to be completed during implementation of Technical Memorandum No. 15 (EG&G, 1994)

TABLE C-2
PHASE I INVESTIGATION
IHSS 133 - ASHPITS 1-4, INCINERATOR,
AND CONCRETE WASH PAD

Activity	Purpose	Location	Sample Number
Review Aerial Photographs	Identify extent of the areas, including areas beyond the boundaries of the units	Entire site and north of road	NA
Radiation Survey	Locate areas of anomalous radiation readings	IHSS areas, areas between pits, and area between Ash Pits and Landfill	NA
Magnetometer Survey	Locate metallic objects	Same as radiation survey	4,864
Surface Soil Sampling	Characterize radiation hotspots	Central location of areas of radiation above background	Unknown
Soil Borings	Characterize subsurface conditions and contamination	On 25-foot centers and over hotspots. Borings will be drilled 5 ft. into weathered bedrock.	maximum of 85
Install wells	Investigate TDEM anomalies	Entire site	7
	Monitor alluvial groundwater downgradient of the unit and provide data for hydrogeologic modelling	See Figure 7-3 in OU5 Work Plan plus additional locations within the IHSS area and near the creek bed	12
Visual survey of Woman Creek	Identify outcropping bedrock	Woman Creek	NA
Conduct field investigation	Evaluate wind re-suspension potential for air monitoring	Entire site and areas in OU3	NA

NA - Not Applicable
Items in bold type indicate activities to be completed during Implementation of Technical Memorandum No. 15 (EG&G, 1994)

TABLE C-3
PHASE I INVESTIGATION
IHSS 142.10 -11 - C-SERIES DETENTION PONDS

Activity	Purpose	Location	Sample Number
Collect Surface water samples	Characterize surface water contamination	5 locations in each pond and from each vertically stratified zone at the deepest point in the pond	16
Collect sediment samples in ponds	Characterize sediments in ponds and contamination	5 locations in each pond. Samples will also be taken from each 5 centimeter interval of sediment from the deepest part of each pond.	10
Collect sediment samples in other locations on Woman Creek	Characterize Woman Creek sediments and contamination	See OU5 Work Plan	10
Collect sediment samples in the South Interceptor Ditch	Characterize South Interceptor Ditch sediments and contamination	See OU5 Work Plan	2
Install wells	Monitor alluvial groundwater downgradient of the ponds	Below Ponds C-1 and C-2 dams (2 each)	4

NA - Not Applicable

TABLE C-4

PHASE I INVESTIGATION

IHSS 209 - SURFACE DISTURBANCE SOUTHEAST OF BUILDING 881, THE SURFACE DISTURBANCE WEST OF IHSS 209
AND THE SURFACE DISTURBANCE SOUTH OF THE ASH PITS

Activity	Purpose	Location	Sample Number
Review Aerial Photographs	Evaluate nature and use of sites and nature of the ponds at IHSS 209	IHSS 209, surface disturbance west of IHSS 209 and surface disturbances south of the Ash Pits	NA
Visual Inspection	Identify stained soil areas	IHSS 209, surface disturbance west of IHSS 209 and surface disturbances south of the Ash Pits	NA
Radiation Survey	Locate areas of anomalous radiation readings	Random survey over area	NA
Sample Sediment and Surface Water	Characterize the two ponds in IHSS 209	From the center of the ponds at IHSS 209	2 each sediment and surface water
Soil Borings	Evaluate surface disturbances south of Ash Pits	2 in each of the parallel excavations, 4 in west fill area, and 1 in east fill area	9
Sample soil	Evaluate potential contamination in small depressions in IHSS 209	One sample from each of the small depressions	3
Surface sample	Evaluate potential contamination in surface disturbance south of Ash Pits	One in north-south excavation, and at stained areas and radiation hotspots	1 and unknown
	Evaluate potential contamination at each of the five small disturbed areas in the surface disturbance west of IHSS 209	One composite surface grab sample from the five disturbed areas.	1
	Evaluate potential contamination within HPGe anomalies	IHSS 209, surface disturbance west of IHSS 209 and surface disturbances south of the Ash Pits	Unknown

NA - Not Applicable

Items in bold type indicate activities to be completed during Implementation of Technical Memorandum No. 15 (EG&G, 1994)

APPENDIX D
RESPIRATORY PROTECTION PROGRAM

APPENDIX D

RESPIRATORY PROTECTION PROGRAM

1.0 INTRODUCTION

Within the scope of field activities scheduled for OU5, ASI personnel may encounter atmospheres containing harmful dusts, fogs, fumes, volatile chemicals, mists and gases which can create respiratory hazards. The Occupational Safety and Health Administration (OSHA) has promulgated standards for many of the air contaminants. These standards are called permissible exposure limits (PEL). If employee exposure to these substances exceeds the PEL, then regulations require engineering or administrative controls be installed or instituted to reduce employee exposure to acceptable levels (below the PEL). When engineering and/or administrative controls are not feasible, then appropriate respiratory protection is required. Respirators are the least acceptable means for reducing personnel exposure to airborne inhaled contaminants since the worker is entering the environment and the respirators only provide protection if properly selected and fitted. Also, some employees may not be able to wear respirators.

1.1 PURPOSE

The purpose of this Respiratory Protection Program is to establish site-specific requirements for the use of respirators during the performance of the OU5 RFI/RI. This program translates the requirements of ASI's Corporate Respiratory Protection Program (Appendix F of ASI's Corporate Health and Safety Policies and Procedures Manual; currently under revision) to activities to be conducted at OU5. An SOP for the proper use of respirators is included as Attachment 1 to this program.

1.2 SCOPE

This program applies to all ASI field personnel assigned to perform activities at OU5. ASI defines a field person as one who, because of present or anticipated job duties/responsibilities, has the potential for exposure to hazardous materials or agents, including but not limited to chemical, biological, infectious, radiological and physical hazards (heavy equipment, electrical, etc.). This program also applies to any ASI-subcontractor personnel who will be performing activities in accordance with the SSHSP.

2.0 MEDICAL SURVEILLANCE REQUIREMENTS

ASI shall not assign employees tasks requiring the use of respiratory equipment until that employee has been found physically and psychologically fit to wear a respirator under working conditions. In order to determine if employees are fit to wear respirators, employees must have physical examinations performed by licensed physicians. Each employee shall be required to be in ASI's Medical Monitoring Program.

3.0 PERSONNEL TRAINING

Prior to working at potential hazardous waste sites or with hazardous substances or at other sites or operations requiring the use of respirators, each employee is required to successfully complete a 40-hour training course on Hazardous Waste Operations and Emergency Response in accordance with OSHA 29 CFR 1910.120. This course includes instruction in the selection, use, maintenance, and storage of respirators. In addition, each employee must successfully complete an 8-hour annual refresher training that reinforces and updates the material presented in the 40-hour course. ASI will conduct a qualitative respirator fit test in conjunction with each annual refresher course. The procedures to be followed for conducting a qualitative fit test are defined in the ASI Corporate Respiratory Protection Program. Quantitative fit tests that meet the requirements defined in the ASI Corporate Respiratory Protection Program may be substituted for the qualitative fit test. Documentation of all OSHA-required training and annual respirator fit-testing will be maintained at the ASI project trailer.

4.0 RESPIRATOR SELECTION

Only MSHA- and NIOSH-approved respirators shall be utilized by ASI employees. Procedures to be followed when selecting an approved respirator are defined in the ASI Corporate Respiratory Protection Program. ASI personnel who are required to use respirators while performing OU5 field activities will use full-facepiece air-purifying respirators (APRs) fitted with the appropriate NIOSH/MSHA-approved cartridge/canister. Each respirator cartridge/canister is color-coded as an indication of the types of atmospheric contaminants the cartridge/canister is designed to protect against. These are outlined in Table 1. The HSS is responsible for ensuring that employees are supplied with the correct cartridge/canister for the potential contaminants present.

The use of self-contained breathing apparatus (SCBA) or supplied air respirators (SARs) shall not be allowed for OU5 activities unless specifically approved by the ASI SSO.

5.0 ISSUANCE OF RESPIRATORS

Each employee included in the medical monitoring program shall be assigned his/her own ASI- provided APR. ASI shall only provide APRs that fit the individual. All respirators issued to personnel will have a separate identification number for tracking purposes. The employee shall be responsible for the proper care, use, routine maintenance and storage of their respirator.

6.0 RESPIRATOR MAINTENANCE

As outlined in the ASI Corporate Respiratory Protection Program, respirator maintenance shall include the following activities: inspection for defects, repair of defects or advising a qualified person of needed repair, cleaning and sanitizing of respirators and proper storage of respirators. Each of these activities is defined in detail in the Corporate Respiratory Protection Program and summarized below.

6.1 INSPECTION

All respirators used on a regular basis shall be inspected before and after each use to assure that they are in satisfactory working condition. Equipment used only for emergencies shall be inspected on a monthly basis, and the inspection shall be documented on the Emergency Respirator Form (Attachment 2). The inspections shall include but not be limited to the following:

- Tightness of connections;
- Condition of respirator (inlet covering, head harness, valves, connecting tubes, harness assemblies, face shield, eye inserts, speaking diaphragm, hoses, etc.);
- End-of-service life indicators (hydrostatic test data on SCBA cylinders); and
- All rubber parts shall be inspected for pliability and signs of deterioration.

6.2 REPAIR

Continued usage of respirator equipment shall require periodic repair or replacement parts. Such repair and parts replaced must be done by a qualified individual that is properly trained and certified in respiratory assembly and defects correction procedures. Replacement parts for respiratory equipment must be those of the manufacturer of the equipment. NEVER substitute any part of the respirator with a

different brand. Any such action will invalidate the manufacturers' warranties, liabilities and operation of this device.

Repairs to be made shall be recorded/documented in equipment logbooks and then marked or flagged with highly visible markers or tape, and proper notification of the SSO or designee shall be made.

Defective reducing or admission valves, regulators and alarms shall be returned to the manufacturer. Records of all repairs, replacement parts and other maintenance shall be kept in equipment-specific logbooks.

6.3 CLEANING AND SANITIZING

Respirators shall be cleaned after each day's use when they are assigned to one individual, or after each use if they are assigned to more than one person. Cleaning and sanitizing of respirators shall be accomplished by the following procedure:

- Remove and properly dispose of any filters or cartridges.
- Wash the facepiece and breathing tube, if applicable, in a solution of one gallon of warm water with one ounce of mask cleaner/sanitizer. The masks shall be washed thoroughly with a clean sponge or soft bristle brush.
- After washing the respirator, rinse completely in clear, warm water.
- Air dry if time permits. If time does not permit, dry all components thoroughly with a clean paper towel or rag.
- Inspect the valves, headstraps and other parts for defects.
- Place respirator in the plastic bag or container that accompanied the device.

6.4 STORAGE

All respirators shall be placed in a plastic bag, preferably one that accompanied the device, and stored in a manner that shall protect it against dust, sunlight, heat, extreme cold, excessive moisture or damaging chemicals. Respirators shall also be stored in a manner that prevents distortion of rubber and other parts.

Emergency and rescue-use respirators shall be stored in an area that is easily accessible and the storage area shall be clearly marked.

7.0 RESPIRATOR PROGRAM EFFECTIVENESS EVALUATION

The SSO shall implement a respiratory program effectiveness evaluation. This shall be accomplished by periodic audits of OU5 work areas during all phases of operation in which respirators are being used. Respirator wearers shall also be consulted periodically about their acceptance to wearing respirators, which will include comfort, resistance to breathing, interference with vision, communication, job performance and confidence in the protection afforded by respirators.

ATTACHMENT 1

STANDARD OPERATING PROCEDURE FOR PROPER RESPIRATORY PROTECTION

1. Before wearing a respirator, each individual must take a medical examination. The purpose of the medical examination is twofold: The results will indicate the employee's ability to work wearing a respirator, and the results establishes baseline parameters for the individual.
2. If, after completing the examination, the doctor approves use of a respirator, then there are training requirements that need to be fulfilled. The employee must successfully complete an OSHA-approved 40-hour Hazardous Waste Operations and Emergency Response training course.
3. Does the atmosphere possess known atmospheric substances and concentrations or unknown atmospheric substances and concentrations?
 - A. If the atmosphere possesses known atmospheric substances and concentrations proceed to Step 4.
 - B. If the atmosphere possesses unknown atmospheric substances and concentrations, proceed to Step 9.
4. Does the known atmosphere contain oxygen between 19.5-25.0% at sea level?
 - A. If yes, proceed to Step 5.
 - B. If no, an open circuit full facepiece positive pressure demand SCBA or a full facepiece positive pressure demand SAR with escape provisions for emergency use is required. SSO approval and review required.
5. Does the known atmosphere contain identified or suspected substances whose concentrations are IDLH?
 - A. If yes, a full facepiece open circuit positive pressure demand SCBA or a full facepiece positive pressure demand SAR with escape provisions for emergency use is required. SSO approval review required.
 - B. If no proceed to Step 6.
6. What are the concentrations of the suspected or identified substances?
 - A. Greater than the OSHA, PEL, or if no PEL exists, greater than any other published exposure level (TLV or Recommended Exposure Limit (REL)). Proceed to Step 7.
 - B. Less than the OSHA, PEL, or if no PEL exists, less than any other published exposure level (TLV or REL) or no special skin protection is required. Level D is applicable.
7. Are there cartridges available for the identified or suspected substances and will these cartridges provide adequate protection against the concentrations known to exist?
 - A. If yes, proceed to Step 8.
 - B. If no, a full facepiece open circuit positive pressure demand SCBA or a full facepiece positive pressure demand SAR or combination SCBA/SAR is required. SSO approval and review required.
8. Do the identified or suspected substances possess adequate warning properties (i.e., eye irritant, taste or smell at concentrations below the PEL, or if no PEL exists, then lower than any other published exposure level such as the TLV or REL)?
 - A. If yes, Level C is applicable.
 - B. If no, a full facepiece open circuit positive pressure demand SCBA or a full facepiece positive pressure demand SAR or a combination SCBA/SAR is required. SSO approval and review required.
9. Does the potential exist for skin exposure to be tolerable or harmful?

- A. If the potential exists for skin exposure to be tolerable, then Level B with a full facepiece open circuit positive pressure demand SCBA or a full facepiece positive pressure demand SAR with escape provisions for emergency respirator use is required. SSO approval and EG&G senior management review required.
 - B. If the potential exists for skin exposure to be harmful, then Level A is required. SSO approval and EG&G senior management review required.
10. Once the respirator has been selected, an inspection of the respirator must be conducted.
 11. If an APR has been selected: Check the straps for cuts and frays. Check the sealing surface of the mask for smoothness. Check the facepiece for uniformity and make sure you can see clearly through it. Check the exhalation valve. Check the cartridge holders and make sure each cartridge holder has a rubber gasket included and that the same make, model and type of each cartridge is in each holder for an APR that requires two cartridges.
 12. If the mask passes these inspections, don the mask and conduct a negative and a positive pressure check.
 13. Get fit-tested with the mask on in a test atmosphere.
 14. If an SCBA has been selected, conduct inspection as per corporate manual.
 15. After using the APR or SCBA, inspect them again (see #11 or #14).
 16. After inspecting the APR or SCBA, the masks must be cleaned in a solution of mask wash and warm water. Let mask air-dry.
 17. Replace APR in bag or box that accompanied the mask. Replace the SCBA in its accompanying case.
 18. All respirators shall be stored in a manner that will protect them against dust, sunlight, extreme cold, excessive moisture or damaging chemicals. Respirators shall also be stored in a manner to prevent distortion of rubber and other parts.

ATTACHMENT 2

**EMERGENCY/ESCAPE RESPIRATOR
MAINTENANCE/INSPECTION SHEET**

[illegible]

Enter your initials when monthly maintenance/inspections are performed.

APPENDIX E

PROPERTY RELEASE EVALUATION FORM FOR EQUIPMENT

PROPERTY RELEASE EVALUATION

PART I ITEM NUMBER _____
(From Record of Property Leaving The RCA)

Description of Property to be Released _____

PART II

A. Property History _____

B. User/Sender: _____

Signature _____

Employee No. _____

Date: _____

Extension: _____

Page No. _____

PART III

A. Radiological Engineering Evaluation _____

B. Survey/Sample Methods to be Used _____

C. Release Criteria _____

D. Evaluated By: _____ Date: _____
Radiological Eng.: Signature _____ Employee No. Extension: _____

APPENDIX F

RESPONSE TO COMMENTS ON DRAFT SITE-SPECIFIC HEALTH AND SAFETY PLAN
DATED JULY 24, 1992

DOCUMENT REVIEW SHEET

Title: Draft Site Specific Health and Safety Plan, Implementation of Phase I RFI/RI Work Plan, Woman Creek Priority Drainage, Operable Unit 5

____ No Comment
 ____ Comments have been annotated in the document for consideration prior to approval.
 ____ Comments shown below are to be dispositioned before the document is submitted for approval.

Page	Section or Paragraph	Comment	Disposition
	Table 3-1	IHSS-115 - for intrusive borings and initial level of protection add the specified action levels and reference them.	Accept. Statement has been modified to clarify that the action levels are stated below.
	Table 3-1	IHSS 133.1, non-intrusive activities, Alpha > 300 cpm, Beta/Gamma > 1000 cpm or 100 cpm above background.	Accept. Limits have been changed as indicated.
	Table 3-1	IHSS 209, non-intrusive operations for alpha 0-1250 cpm; for alpha, change 500-5000cpm to 1250-2500 cpm. Beta/gamma - 0-2500cpm for beta.	Accept. Limits have been changed as indicated. Per phone conversation with Keith Anderson beta/gamma limits were not changed.
	General	Include the DACs for the isotopes identified	Accept. Table 9-1 was added listing DACs.
	3.2.3.3	Include statements that do not allow for eating, drinking, or smoking (add chewing) in the CRZ or Exclusion Zone.	Accept. Statement has been added to Section 3.2.3.3.
	2.1	What is meant by "complimentary" services?	"Complimentary has been removed from the sentence.
	2.2.5	Change Radiation Protection Technician to Health and Safety Specialist. Change controlled areas to "radiologically controlled areas or areas of suspected/potential soil contamination". Change "wipe" to "smear". HSSs are approved by EG&G Radiological Engineering and will perform duties in accordance with the EMRGs.	Accept. Changes have been made to Section 2.2.5 as indicated.
	3.1	Change radiation surveys to "radiological surveys". Make this consistent throughout.	Accept. The term "radiation surveys" has been modified to "radiological surveys" throughout.

Reviewer's Name: Keith Anderson

Phone No: 966-5151

Date: 8/7/92

Dept. RE

DOCUMENT REVIEW SHEET

Title: Draft Site Specific Health and Safety Plan, Implementation of Phase I RFI/RI Work Plan, Woman Creek Priority Drainage, Operable Unit 5

____ No Comment
 ____ Comments have been annotated in the document for consideration prior to approval.
 ____ Comments shown below are to be dispositioned before the document is submitted for approval.

Page	Section or Paragraph	Comment	Disposition
	Table 3-1	IHSS 115 - to monitoring requirements add contamination control survey.	Accept. Term has been added as requested.
3-20		HSS Responsibilities - #7 - Why is the 5' distance different than the one mentioned for 4' for distance around drill rig. #8 - the HSSO will ensure that equipment is decontaminated according to procedure and that equipment leaving the potentially contaminated areas is surveyed according to the EMRGs.	The drilling rig clearance mentioned in number 7 is to make sure nothing blocks emergency egress and refers to immobile objects such as drums and equipment, not to humans. The 4 ft. distance mentioned in the bulleted items above refers to humans. A hazard to humans exists when augers are turning. No. 8 has been amended as requested.
	3.6.1.4	Reference the EMRG in the second paragraph. This would go in the first sentence.	Accept. Reference to the EMRG has been incorporated into the first sentence.
	Table 3-3	Change the action level for alpha to 0-1250 cpm. Change the beta/gamma to 2500 cpm for resp.	Accept. Levels changed as noted. Per phone conversation with Keith Anderson, beta/gamma limits were not changed.
	3.6.4.4	Reference the EMRG for screening of personnel - in specific EMRG 2.1.	Accept. Reference has been added.
	5.2.1	Change "controlled area" to "radiologically controlled area".	Accept. Change has been made.

Reviewer's Name: Keith Anderson

Phone No: 966-5151

Date: 8/7/92

Dept. RE

DOCUMENT REVIEW SHEET

Page 3 of 3

Title: Draft Site Specific Health and Safety Plan, Implementation of Phase I RFI/RI Work Plan, Woman Creek Priority Drainage, Operable Unit 5

No Comment
Comments have been annotated in the document for consideration prior to approval.
Comments shown below are to be dispositioned before the document is submitted for approval.

Page	Section or Paragraph	Comment	Disposition
	6.1, 3rd paragraph	Shouldn't the EG&G personnel comply with the H&S Plan for OU5 that is specifically for EG&G.	Comment noted. The EG&G OU5 Site Specific Health and Safety Plan states that "at a minimum, EG&G personnel requiring access into areas zoned by subcontractors as restricted or exclusionary will follow subcontractor PPE requirements" (Section 6.1, 3rd paragraph). No change was made.
	7.2.2	Add reference to EMRG 3.1 and 3.2.	Accept. References added
	Appendix D	Remove the PREs that are in this plan. They are specifically for 995, not OU5. They will be similar but not adequate for this project. Include a blank.	Accept. Bldg. 995 forms have been replaced with a blank PRE.

Reviewer's Name: Keith Anderson

Phone No: 966-5151

Date: 8/7/92

Dept. RE

DOCUMENT REVIEW SHEET			Page 1 of 1
Title: Draft Site Specific Health and Safety Plan, Implementation of Phase I RFI/RI Work Plan, Woman Creek Priority Drainage, Operable Unit 5			
No Comment Comments have been annotated in the document for consideration prior to approval. Comments shown below are to be dispositioned before the document is submitted for approval.			
Page	Section or Paragraph	Comment	Disposition
	2.2.6	Need to include 966-2911 is emergency phone number and Rocky Flats Fire Department also provides E.M.S. (emergency medical services).	Accepted. A sentence has been added to Section 2.2.6 discussing RFP EMS and giving the emergency phone number.
Reviewer's Name: Myron Biggs (for T. Parker)		Phone No: 966-4337	Date: 8/10/92 Dept. Fire

DOCUMENT REVIEW SHEET		Page 1 of 1
Title: Draft Site Specific Health and Safety Plan, Implementation of Phase I RFI/RI Work Plan, Woman Creek Priority Drainage, Operable Unit 5		
<input checked="" type="checkbox"/> No Comment Comments have been annotated in the document for consideration prior to approval. Comments shown below are to be dispositioned before the document is submitted for approval.		
Page	Section or Paragraph	Disposition
Reviewer's Name: Deb Davison		Phone No: Date: 8/19/92 Dept. Occupational Health

DOCUMENT REVIEW SHEET

Page 1 of 1

Title: Draft Site Specific Health and Safety Plan, Implementation of Phase I RFI/RI Work Plan, Woman Creek Priority Drainage, Operable Unit 5

☒ No Comment
☐ Comments have been annotated in the document for consideration prior to approval.
☐ Comments shown below are to be dispositioned before the document is submitted for approval.

Page	Section or Paragraph	Comment	Disposition
3-18	3.3.4	Add: Wind speed requirement to this section. Follow RFP criteria (see attached recommendations).	Accepted. A wind speed requirement has been added.
11-4	11.6	First aid is supplied by EG&G medical. Eye wash systems must be 15 minute supply.	Accepted. Paragraph has been amended to specify a 15-minute eyewash and that EG&G medical will provide first aid.
11-4	11.8	Complete phone number provided.	Accept. Phone numbers have been added.

Reviewer's Name: Keith E. Dryer

Phone No: 966-2190

Date: 8/4/92

Dept. Ind. Safety

*Weather
Condition*

Recommended Wind Speed Limiting Conditions

Due to the recent injuries and property damage that occurred in the Rocky Flats area, it has become necessary for the following guidelines to be issued.

The following guidelines are to be followed during periods of average sustained winds.

30 mph STRONG WIND WARNING

1. Plant Announcement of strong wind warnings
 - * Check all materials/debris to see that it is secured.
 - * HS&E Area Engineers will investigate the need to work on roofs and elevated surfaces, etc. on a case by case basis with input from Industrial Safety.
 - * Work inside tents may proceed if material outside is secured.

45 mph GALE WARNINGS

1. All activities outside will be limited.
 - * HS&E Area Engineers, in consultation with Industrial Safety, will review all outside work (including work inside tents) and approve on a case by case basis.
 - * Outside construction activities will be shut down.

55 mph WHOLE GALE WARNING

1. All outdoor activities, except emergency activities, will cease upon announcement from the EOC.
2. Notification of potential activation of the EOC will be made.
3. All work in the tents will be shut down and tents evacuated.

65 mph WHOLE GALE WARNING

1. Crisis Management Team will assemble in the EOC to determine what further action including activation of the EOC will be necessary to protect personnel and property.

DOCUMENT REVIEW SHEET

Page 1 of 1

Title: Draft Site Specific Health and Safety Plan, Implementation of Phase I RFI/RI Work Plan, Woman Creek Priority Drainage, Operable Unit 5

 X No Comment
Comments have been annotated in the document for consideration prior to approval.
Comments shown below are to be dispositioned before the document is submitted for approval.

Page	Section or Paragraph	Comment	Disposition
	8.1	First aid trained person should be also trained in blood born pathogens as per 29 CFR Part 1410.1030 (ASI should have and exposure control plan).	Comment noted. The cited section (8.1) refers to ASI's medical program. A subsection (10.1.4) has been added to the training section that discusses ASI's first aid training program. The ASI Corporate Health and Safety Officer does not feel that 29 CFR Part 1410.1030 is as applicable to the type of work being done at OU5 as it is to occupations such as nursing and emergency medical services. However, he is reviewing the regulation for its applicability to this work plan and will develop a blood born exposure control plan should it be deemed necessary.

Reviewer's Name: Francis Furman

Phone No: 966-2845

Date: 7/30/92

Dept. Occupational Health

DOCUMENT REVIEW SHEET

Title: Draft Site Specific Health and Safety Plan, Implementation of Phase I RFI/RI Work Plan, Woman Creek Priority Drainage, Operable Unit 5

____ No Comment
 ____ Comments have been annotated in the document for consideration prior to approval.
 ____ Comments shown below are to be dispositioned before the document is submitted for approval.

Page	Section or Paragraph	Comment	Disposition
viii		What is CRDL & CRQL? Definition as opposed to wording of acronym.	Comment noted. CRDL has been removed from the list, CRQL is the quantitation limit set forth in the U.S. EPA's contract lab program. This has been defined in the text.
1-2		Add Health & Safety Practices Manual to the bulletized list.	Accept. Health & Safety Practices Manual has been added to bulletized list.
	General	Add "s" to make IHSS plural, "IHSSs".	Accept. "IHSS" has been pluralized where appropriate.
2-2	2.2.4 First Bullet	Add "records of this training must be maintained at site trailer".	This requirement is already included in bullet #4.
2-2	2.2.4 Second Bullet	This can be discussed in the site briefing. Add "all workers must read SSHSP and this must be documented and maintained in records trailer".	Accept. "By conducting site-specific briefings" has been added to bullet. Accept. This requirement has been added to Section 2.2.4 as a bullet.
	Table 3-1	Fill in blanks with "none". Do not leave blank.	Accept. Blank areas on table have been filled in with "none".
Reviewer's Name: Lisa A. LeLievre			Dept. 14
Phone No.: 966-7961			Date: 8/14/92

DOCUMENT REVIEW SHEET

Page 2 of 2

Title: Draft Site Specific Health and Safety Plan, Implementation of Phase I RFI/RI Work Plan, Woman Creek Priority Drainage, Operable Unit 5

☐ No Comment
☐ Comments have been annotated in the document for consideration prior to approval.
☒ Comments shown below are to be dispositioned before the document is submitted for approval.

Page	Section or Paragraph	Comment	Disposition
3-2	Table 3-1	Add "and" instead of / between noise and probe in other control section for Prairie Rattlesnake.	Accept. "And" has been added.
3-4	Table 3-1	Add Draeger tubes to monitoring requirements for chemicals (real time). 1/10 DAC should refer to rad monitoring and not chemical monitoring. What type of respiratory protection will be worn if action levels for chemicals are exceeded? Should be included.	Accept. All changes made as recommended.
10-3	10.2	Change A in radiation to lower case a.	Accept. Correction has been made.
11-4	11.8	Include telephone number.	Accept. Correction has been made.

Reviewer's Name: Lisa A. LeLievre Phone No.: 966-7961 Date: 8/14/92 Dept. 14

DOCUMENT REVIEW SHEET

Title: Draft Site Specific Health and Safety Plan, Implementation of Phase I RFI/RI Work Plan, Woman Creek Priority Drainage, Operable Unit 5

☐ No Comment
☐ Comments have been annotated in the document for consideration prior to approval.
☒ Comments shown below are to be dispositioned before the document is submitted for approval.

Page	Section or Paragraph	Comment	Disposition
2-1	2.1	Need to make clear that ASI is solely responsible for the H&S of their people.	Accept. The paragraph has been altered for clarity.
3-4	Table 3-1	Beryllium dust action level 5 mg/m ³ ?	Accept. Action level was changed to "micrograms per meter cubed" and beryllium has been separated from dust in the table.
3-7	Table 3-1	How will monitoring for unknowns be conducted? As above? SCBA use requires mock-up. SMR?	Accept. Monitoring requirements have been clarified. The "5 minute escape SCBA noted here has been changed to a "5-minute escape hood" to indicate its use for back-up emergency purposes only. Requirement for EG&G senior management walk-down was added.
3-13		How will heat stress monitoring be conducted? State equipment - WBGT.	Comment noted. Monitoring requirements for heat stress including use of WBGT is specified in Appendix B.
8-3		ASI should get their respirator program approved so fits will not necessary by EG&G. This may have been done.	Accept. ASI is in the process of obtaining EG&G approval. An OU5-specific program iw included as Appendix D of this SSHSP.
	9-1	Add WBGT.	Accept. A WBGT has been added to this section.
	1-2	Contents of plan not in plan- new technology program?	Accept. The reference to "new technology program" has been removed.
Reviewer's Name: Jeff Van Mcaghan		Phone No: 966-5810	Date: 8/14/92
			Dept. Ind. Hyg.

DOCUMENT REVIEW SHEET

Title: Draft Site Specific Health and Safety Plan, Implementation of Phase I RFI/RI Work Plan, Woman Creek Priority Drainage, Operable Unit 5

☐ No Comment
☐ Comments have been annotated in the document for consideration prior to approval.
☒ Comments shown below are to be dispositioned before the document is submitted for approval.

Page	Section or Paragraph	Comment	Disposition
	General	<p>Does this plan give any basic description or what ASI will be doing other than in risk assessment section?</p> <p>Describe what activities will be performed under this plan.</p>	Activities to be performed are discussed in Section 3.6 titled "Anticipated Work Activities".

Reviewer's Name: Jeff Van Meaghan

Phone No: 966-5810

Date: 8/14/92

Dept. Ind. Hyg.

APPENDIX G

RESPONSE TO COMMENTS ON DRAFT FINAL SITE-SPECIFIC HEALTH AND SAFETY PLAN
DATED AUGUST 24, 1992

DOCUMENT REVIEW SHEET

Page 1 of 1

Title: Draft Final Site Specific Health and Safety Plan, Implementation of Phase I RFI/RI Work Plan, Woman Creek Priority Drainage, Operable Unit 5
(Comments received via telephone)

☐ No Comment
☐ Comments have been annotated in the document for consideration prior to approval.
☒ Comments shown below are to be dispositioned before the document is submitted for approval.

Page	Section or Paragraph	Comment	Disposition
1-2	1.2	Add EG&G Health & Safety Practices Manual to the bulletized list.	Accept. EG&G Health & Safety Practices Manual has been added to bulletized list.
2-1	2.1	Delete last sentence of paragraph.	Accept. Sentence has been deleted.
3-4	Table 3-1	Specify that air-purifying respirators cannot be used when carbon tetrachloride or methylene chloride are present.	Accept. A requirement has been added that a supplied air respirator or SCBA will be required when either of these chemicals are present. As discussed in the text of the plan the use of supplied air will require the approval of the ASI CHSM and an EG&G senior management walk down.
3-5	Table 3-1	The action level for beryllium should be 2 $\mu\text{g}/\text{m}^3$.	Accept. The action level has been changed.
3-7	Table 3-1	The "Initial Level of Protection" for non-intrusive operations at IHSS 209 and other surface disturbances should specify the use of EPA Level D with a 5-minute escape hood.	Accept. This requirement has been added.

Reviewer's Name: Lisa A. LeLievre Phone No.: 966-7961 Date: 8/25/92 Dept. Industrial Hygiene

DOCUMENT REVIEW SHEET			Page 1 of 1
Title: Draft Final Site Specific Health and Safety Plan, Implementation of Phase I RFI/RI Work Plan, Woman Creek Priority Drainage, Operable Unit 5 (Comments received via telephone)			
_____ No Comment _____ Comments have been annotated in the document for consideration prior to approval. _____ Comments shown below are to be dispositioned before the document is submitted for approval. X _____			
Page	Section or Paragraph	Comment	Disposition
	Table 3-1	Change radiation survey to radiological survey throughout.	Accept. This change has been made.
	Table 3-1	IHSS 133.1, soil penetrating activities, change alpha action level to 300 cpm and beta/gamma to 1000 cpm.	Accept. Limits have been changed as indicated.
Reviewer's Name: Keith Anderson		Phone No: 966-5151	Date: 9/1/92
			Dept. Radiological Engineering

APPENDIX H

RESPONSE TO AUGUST 22, 1994 COMMENTS ON SITE-SPECIFIC HEALTH AND SAFETY PLAN
IN PREPARATION FOR IMPLEMENTATION OF TECHNICAL MEMORANDUM NO. 15

REVIEW AND COMMENT RECORD **1. Response Date: August 28, 1994**

2. Document Title: Operable Unit No. 5, Site-Specific Health & Safety Plan

Reviewing Agency: EG&G EOM/ERPD

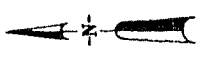
Review Date: August 22, 1994
Page 1 of 1

General (G) comments require resolution but do not require resolution acceptance. Mandatory (M) comments require resolution and resolution acceptance.

Item G or M	Page	Item	Comment(s)	Resolution	Resolution accepted INIT/DATE
G			Comments submitted in response to review requested for implementation of additional field work under Phase I.	N/A	N/A
G	2-4	2.3	Ensure that the personnel identified are appropriate.	The personnel identified in Section 2.3 was revised to reflect the ASI personnel currently assigned to this project.	
G			Ensure that new tasks are identified specifically and included in the HASP. These are only required by referencing the task as a list. No additional monitoring or hazard analysis should be required for the drilling and sampling activities.	The tables in Appendix C were updated to include the activities proposed in Technical Memorandum No. 15. These activities are the same as those addressed by the existing health & safety plan. Thus, no additional monitoring or hazard analysis was required.	
M			Include hazard analysis and task description for all activities not included in the HASP.	As discussed above, all of the proposed field activities are addressed by the existing health & safety plan.	

MAP LEGEND

- STREAMS, DITCHES, DRAINAGE FEATURES
- PAVED ROADS
- DIRT ROADS
- SURFACE WATER IMPOUNDMENTS
- BUILDINGS
- INDIVIDUAL HAZARDOUS SUBSTANCE SITES (APPROXIMATE LOCATION)



SCALE: 1" = 1000'

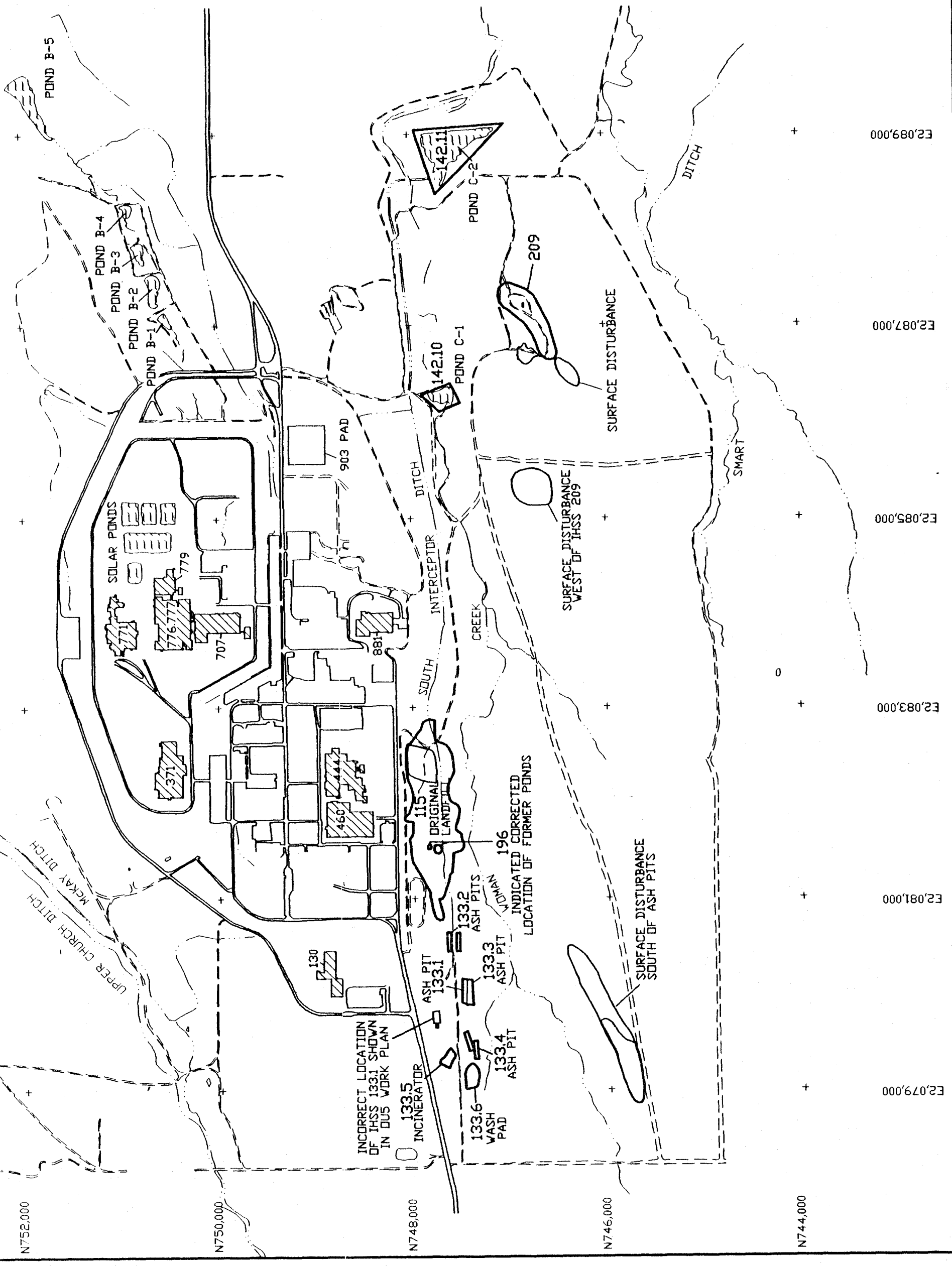
Drawn	N/A	5/11/94
Checked	WSP	5/11/94
Approved		
EG&G		
Approved		
DDE		

WOMAN CREEK PRIORITY DRAINAGE AREA (OPERABLE UNIT No. 5)

THIS - AMENDED FIELD SAMPLING PLAN
DUS PHASE 1 ERT/RI IMPLEMENTATION



FIGURE 1.2-1



E2,089,000

E2,087,000

E2,085,000

E2,083,000

E2,081,000

E2,079,000

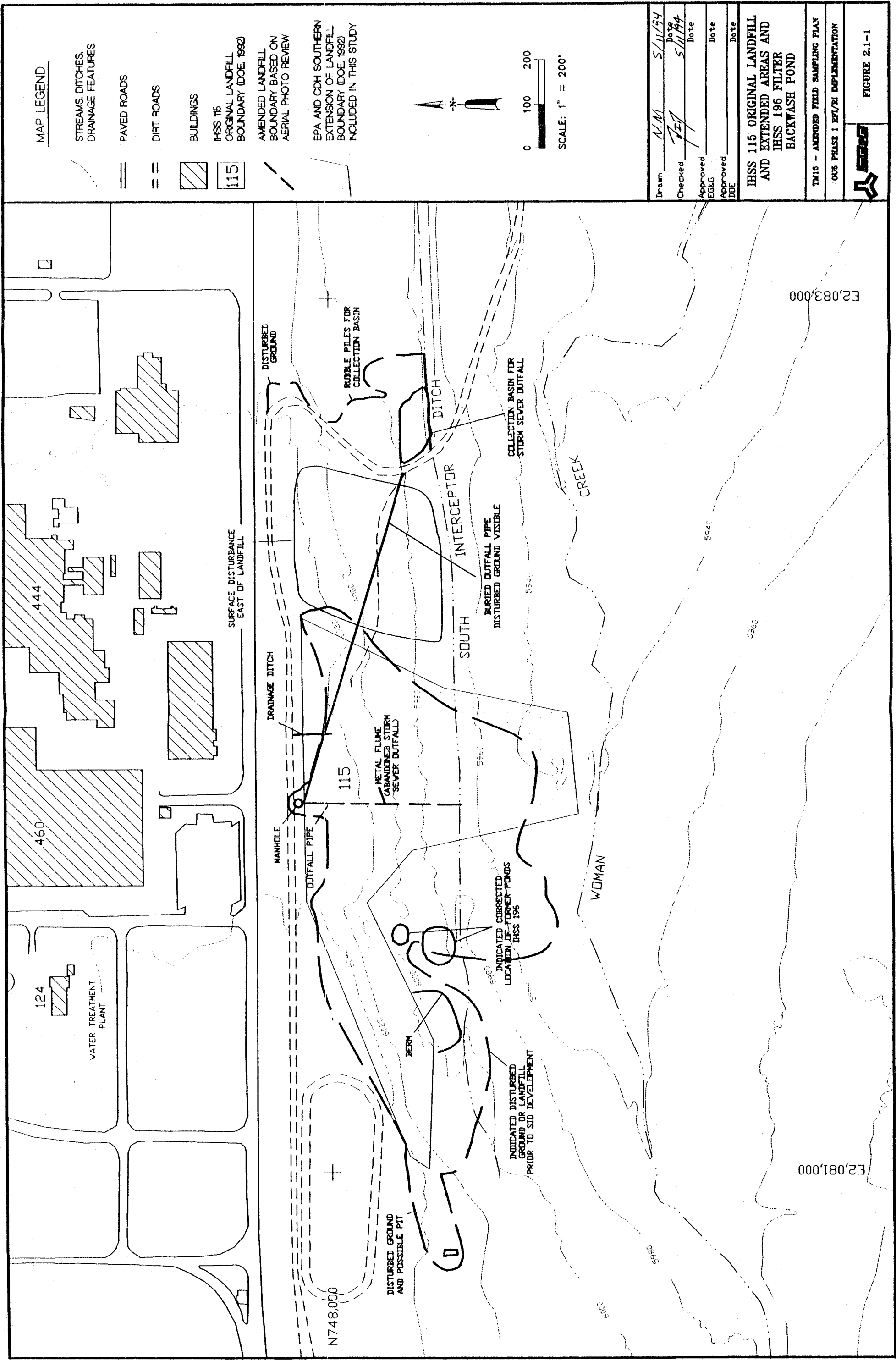
N752,000

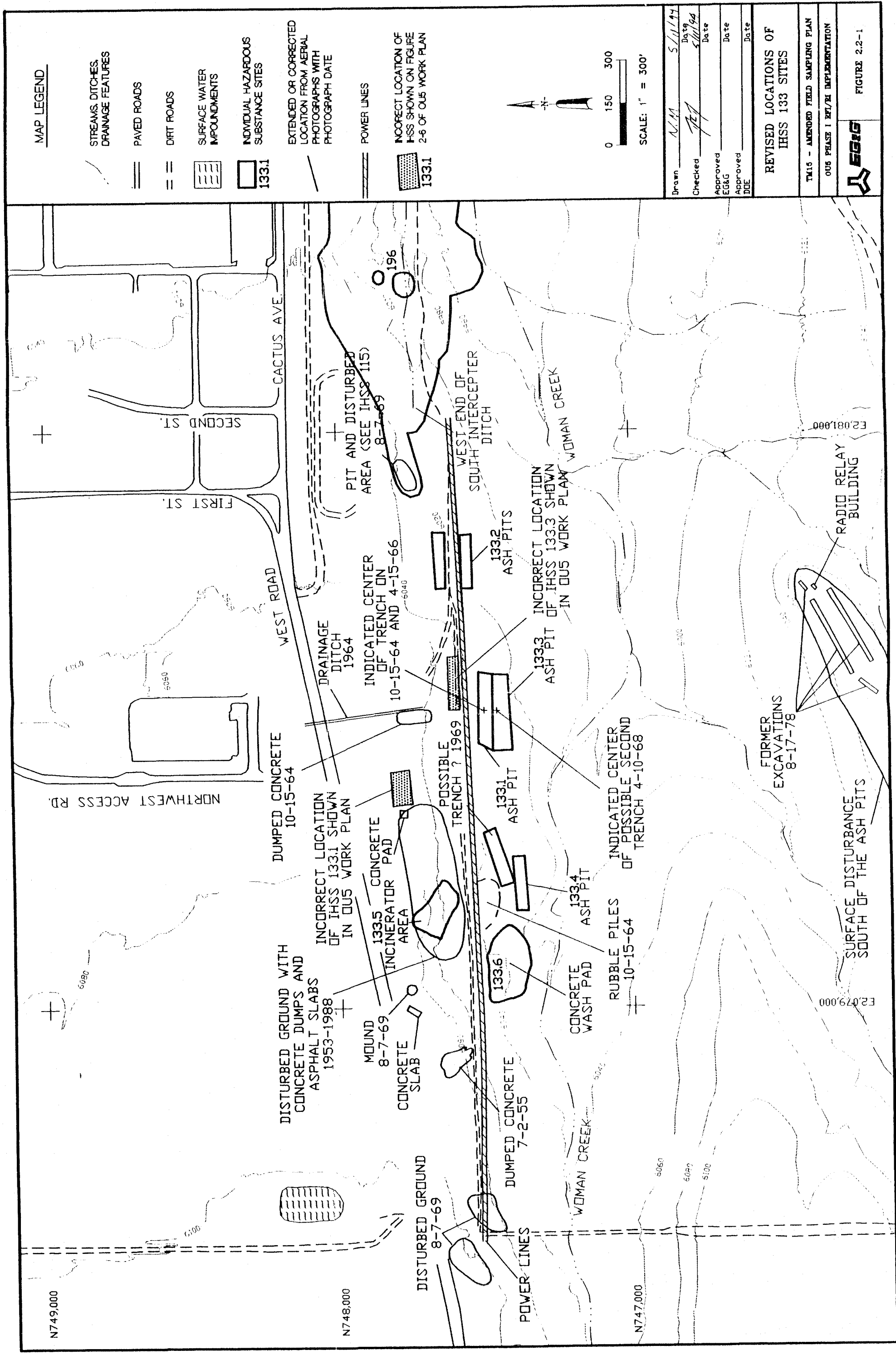
N750,000

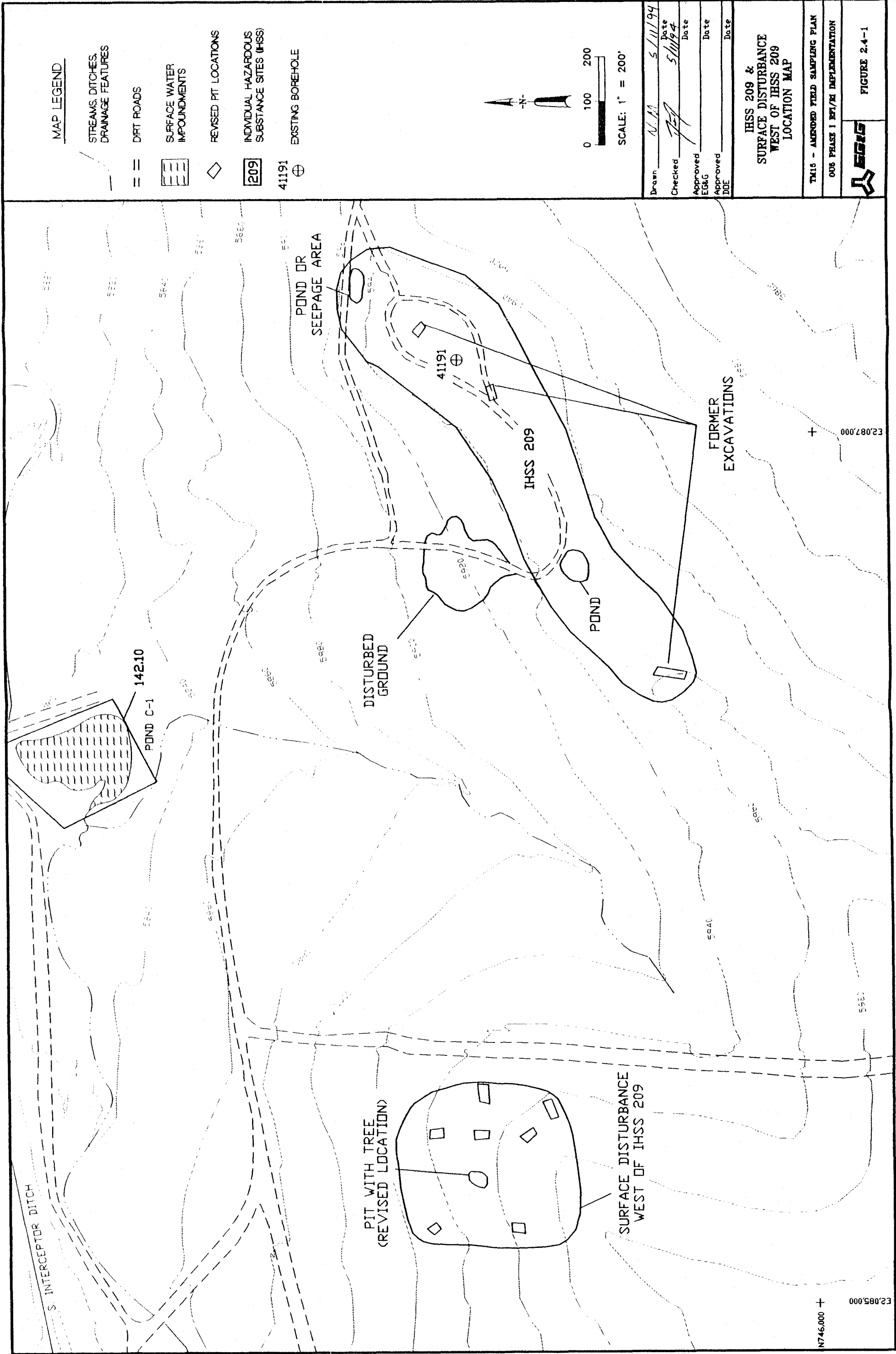
N748,000

N746,000

N744,000

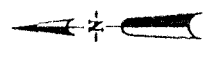






MAP LEGEND

- STREAMS, DITCHES, DRAINAGE FEATURES
- DIRT ROADS
- SURFACE WATER IMPOUNDMENTS
- REVISED PIT LOCATIONS
- INDIVIDUAL HAZARDOUS SUBSTANCE SITES (IHSS)
- EXISTING BOREHOLE



SCALE: 1" = 200'

Drawn	N.A.	5/11/94
Checked	FEJ	5/11/94
Approved		
EG&G		
Approved		
DDE		

IHSS 209 &
SURFACE DISTURBANCE
WEST OF IHSS 209
LOCATION MAP

TA16 - AMENDED FIELD SAMPLING PLAN
OUG PHASE I RFI/RI IMPLEMENTATION



FIGURE 2.4-1

